

BOTANICAL ABSTRACTS

PUBLISHED UNDER THE DIRECTION OF
THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

IMPORTANT NOTICE

Beginning with the literature of 1926, the Union of American Biological Societies has inaugurated **BIOLOGICAL ABSTRACTS**, the first issue of which appeared in December, 1926. The journal strives to present adequate abstracts and accurate indexes of the world's literature in theoretical and applied biology, exclusive of clinical medicine.

As announced, **BOTANICAL ABSTRACTS** has merged into the new journal, as have also **ABSTRACTS OF BACTERIOLOGY** and the abstracting sections of several other journals. In order, however, that there should be no serious gap between Botanical Abstracts and Biological Abstracts, the present additional volume (Volume 15) of Botanical Abstracts has been issued to cover the literature appearing to the close of 1925, as well as to bring up the more serious arrears and omissions during the period covered by Botanical Abstracts (1919-1925). This issue (Nos. 7-11) is the **FINAL ABSTRACT ISSUE** of Botanical Abstracts.

The **INDEX ISSUE** of Botanical Abstracts for Volume 12 (No. 10) will be published shortly. Publication of the index issues for Volumes 13, 14, and 15 (No. 12 of each) will be somewhat delayed, but indexes will be sent eventually to all subscribers to the volumes concerned, without further charge.

All correspondence regarding back sets, and the index for the first ten volumes, of Botanical Abstracts should be addressed to the Business Manager of Botanical Abstracts, Natural Science Building, Ann Arbor, Michigan, U. S. A.

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BOTANICAL ABSTRACTS

A monthly serial furnishing abstracts and citations of publications in the international field of botany in its broadest sense

UNDER THE DIRECTION OF

THE BOARD OF CONTROL OF BOTANICAL ABSTRACTS, INC.

J. R. SCHRAMM, Editor-in-Chief

FREDERICK V. RAND, Associate Editor-in-Chief

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ANNOUNCEMENT

This issue (Vol. 15, Nos. 7-11) is the FINAL ABSTRACT ISSUE OF BOTANICAL ABSTRACTS.

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Due to late arrival, a small proportion of the manuscript in each section has not been seen by Section Editors. Furthermore, some Section Editors have not been in a position to check proof.

The INDEX ISSUE of Botanical Abstracts for Volume 12 (No. 10) will be published shortly. Publication of the index issues for Volumes 13, 14, and 15 (No. 12 of each) will be somewhat further delayed, but indexes will be sent eventually to all subscribers to the volumes concerned, without further charge.

AGRONOMY (CROPS AND SOILS)

A. J. PIETERS, *Editor*MARY R. BURR, *Associate Editor* (Crops)T. D. RICE, *Associate Editor* (Soils)

(See also in this issue Entries 6237, 6479, 6498, 6514, 6550, 6551, 6563, 6584, 6610, 6626, 6630, 6633, 6637, 6837, 6858, 6859, 6903, 6971, 7132, 7140, 7171, 7205, 7242, 7286, 7367, 7371, 7406, 7425, 7435, 7436, 7450, 7466, 7470, 7486, 7488, 7489, 7494, 7498, 7515, 7521, 7537, 7555, 7580, 7646, 7720, 7726, 7755, 7756, 7792, 7801, 7802, 7811, 7819, 7821, 7822, 7831, 7839, 7840, 7846, 7856, 7859, 7860, 7861, 7890, 7914, 7926, 7930, 7983, 7986, 8011, 8215, 8513, 8638, 8641, 8731, 8790, 8823, 8872, 8918, 8935, 8952, 9105, 9106, 9155, 9156, 9203, 9206, 9211, 9287, 9291, 9301, 9303, 9354, 9413, 9455, 9460, 9462, 9533)

5779. ANONYMOUS. Australian sugar industry reviewed. A history of perseverance and progress. [Recent address by H. T. EASTERBY.] South African Sugar Jour. 9: 685, 687, 689. 1925.

5780. ANONYMOUS. Beet sugar experiments in Louisiana. Australian Sugar Jour. 17: 591. 1925.

5781. ANONYMOUS. Deterioration of crown lands in mid-west districts of the North Island. New Zealand Jour. Agric. 31: 36-51. 1925.—The following factors, as contributing to deterioration, are discussed: Too wet climatic conditions preventing hot burns and favoring strong and rapid growth of ferns; insufficient fencing; too close and too continuous grazing; sowing of grasses and clovers not wholly adapted; depletion of fertility; lack of knowledge of local conditions; difficulty of providing winter feed; and too small holdings.—*H. L. Westover*.

5782. ANONYMOUS. Mauritius Department of Agriculture (Report of the Director). So. African Sugar Jour. 9: 667, 669, 671, 673. 1925.—The report describes the use in local factories of the Roussel and of the Bach process, of new apparatus as the Philippe filters and the use of indicator methods "for determining the hydrogen ion concentration of sugar house liquors." The organization of labor, various implements for cutting trash, plows and tractors for various uses and a patented device for applying molasses to sugar cane are described. Mosaic disease does not exist in Mauritius, but is prevalent to a considerable extent in Réunion, particularly in the leeward districts.—*Nellie E. Fealy*.

5783. ANONYMOUS. Neue Erfahrungen aus dem Zuckerrübenbau. [New experiences in growing sugar beets.] Zuckerrübenbau 7: 1271. 1925.—Two field experiments show the necessity of applying ammonia as a fertilizer early before sowing, and in several portions.—*B. Nebel (transl.)*.

5784. ANONYMOUS. New book on sugar. [Rev. of: Fairrie, Geoffrey. Sugar. 230 p. *Illus.* Fairrie & Co., Ltd.: Liverpool, 1925.] South African Sugar Jour. 9: 795. 1925.—The reviewer says of this book that "It is the first and only book we have seen which illustrates in a simple manner the various processes employed in sugar manufacture." The contents of the book are briefly summarized.—*Nellie E. Fealy*.

5785. ANONYMOUS. New varieties in India. [Report by WYNNE SAYER, Secretary of Sugar Bureau, India, for 1923-1924.] South African Sugar Jour. 9: 632. 1925.—Several new varieties of sugar cane are described and data given on yield, sugar and fiber content and ratooning quality.—*Nellie E. Fealy*.

5786. ANONYMOUS. Potato growing in New Hampshire. New Hampshire Agric. Exp. Sta. Ext. Bull. 23. 2-31. 14 fig. 1924.—Methods of growing potatoes, as determined from a questionnaire survey of New Hampshire growers.—*G. F. Potter*.

5787. ANONYMOUS. Power alcohol production. Australian Sugar Jour. 17: 429-435, 441. 1925.—The article consists of an address by A. J. DRAPER on power alcohol production, delivered at a council meeting of the Australian Sugar Producers' Association, and a general discussion of the subject. The address gives a concise history of the steps taken to establish a power-alcohol industry in Australia especially through the manufacture of the residual 40% of the juice separated in 1 boiling from the easily crystallizing 60% to be used for sugar

manufacture. The growing of cassava for use in the production of power alcohol in connection with cane is given some attention.—*Nellie E. Fealy*.

5788. ANONYMOUS. Spinning and weaving coconut fibre [Manchester Guardian]. Australian Sugar Jour. 17: 586. 1925.—A description is given of a recently invented process for making from coconut fiber a material which may be used instead of jute for the manufacture of bags and which can be produced at $\frac{1}{5}$ the price of jute. The 5 operations in the process are outlined.—*Nellie E. Fealy*.

5789. ANONYMOUS. Suggested beet industry for S. Africa. South African Sugar Jour. 9: 745. 1925.—Reports of the Agricultural Department experts suggest that much South African land is eminently suitable for sugar-beet production. Here the sugar content of the beet is between 18 and 20%. Experiments have shown that on the high veld, at least, the beets may be left in the ground for a long period in winter without detriment. Beets keep the land in a more fertile condition than most crops and are excellent in rotation with maize. Mealies grown on old beet land give better returns than when planted on ordinary ground.—*Nellie E. Fealy*.

5790. ANONYMOUS. The International Seed Testing Association Constitution and Statutes. Rept. 4th Internat. Seed Testing Congress 1924: 115-117. 1925.

5791. ANONYMOUS. The sugar industry in Formosa. Internat. Sugar Jour. 27: 629. 1925.—Not until Formosa was ceded to Japan in 1895 did its manufacture of sugar make real development. The history and present status of the industry are given.—*Nellie E. Fealy*.

5792. ANONYMOUS. The working of the seeds act, 1920, during the season, 1923-24. Jour. Ministry Agric. Great Britain 31: 821-827. 1924.

5793. ANONYMOUS. To save weeding. South African Sugar Jour. 9: 407. 1925.—The substance left after the juice is pressed out of sugar cane is reduced to a pulp and made into an asphalt-impregnated paper called "thermo-gen." This is made into long rolls and laid by machines over sugar plantations. It prevents washing away of nutritious elements by torrential rains, enables the soil to retain moisture, allows the sun's heat to pass through, and keeps weed seed from the soil. The sugar-cane pierces the paper.—*Nellie E. Fealy*.

5794. ANONYMOUS. World wheat production. Science 61: 408. 1925.

5795. ANDERSON, E. S. The beet sugar industry of Nebraska as a response to geographic environment. Econ. Geog. 1: 373-386. 13 fig. 1925.—With the exception of rainfall, conditions in the western half of the North Platte Valley of Nebraska are very favorable to sugar beets, and irrigation has supplemented the lack of moisture.—*W. H. Cole*.

5796. ANDRADE, ALFREDO A. DE. As leguminosas e suas farinhas alimentares. Valor energetico e biologico. [Food value of legumes.] Bol. Museu Nacion. Rio de Janeiro 1: 295-340. 1924.—Analyses of *Phaseolus vulgaris* varieties, *Lens esculenta*, *Pisum sativum*, and *Cajanus indicus* demonstrate the high nutritive value of flours made from them.—*Edith K. Cash*.

5797. ANDRADE, ALFREDO ANTONIO DE. Forragens agrestes do Estado de Matto-Grosso. [Wild forage plants in Matto-Grosso (Brazil).] Bol. Museu Nacion. Rio de Janeiro 1: 413-424. 1925.—The following were analysed for forage value: *Pennisetum setosum*, *Heteropogon villosus*, *Setaria gracilis*, *Paratheria prostata*, and *Reimaria brasiliensis*.—*Edith K. Cash*.

5798. ANGÉ-LARIBÉ, MICHEL. L'agriculture pendant la guerre. [Agriculture during the war.] Yale Univ. Press: New Haven, 192[3].

5799. ANGOULVANT, GABRIEL LOUIS. Une politique nationale du coton par nos colonies. Le projet Bélimé. [A national cotton policy for our colonies.] 40 p., map. Ed. de "Colonies et marine": Paris, 1921.

5800. APPLEMAN, C. O. Potato sprouts as an index of seed value. Maryland Agric. Exp. Sta. Bull. 265. 239-258. 10 fig. 1924.

5801. APPLETON, W. H., AND H. B. HELMS. The rate of absorption of nitrate of soda by oats and cotton when applied at different stages of plant growth. Jour. Amer. Soc. Agron. 17: 596-605. 1925.—In greenhouse experiments, with NaNO_3 applied at the rate of 400 pounds per acre 14 days after planting, absorption of the nitrate was very slow for 3 weeks, after which absorption increased and all nitrate was absorbed by the close of the 7th week. When applied to oats at later stages, the rate of absorption was more rapid. Nitrate applied 42, 70 and 92 days after planting was completely absorbed in 20, 14 and 10 days, respectively.

With both oats and cotton there was a close correlation between rate of growth and rate of nitrate absorption. With cotton, NaNO_3 at 600 pounds per acre 14, 40 and 61 days after planting gave complete absorption in 30, 14 and 11 days, respectively.—*F. M. Schertz*.

5802. ARRHENIUS, P. *Die Kalkfrage des Zuckerrübenbaues*. [Liming sugar beets.] Zuckerrübenbau 7: 90-97. 3 fig. 1925.—A soil showing 7-7.5 pH is best adapted to sugar-beets. Twenty farms were studied during 6 years. The relation between pH of the soil and yields was: $\text{pH} > 7 = 100$; $6.9 - 6.7 = 92$; $6.6 - 6.7 = 82$; $6.3 - 6.0 = 59$; $\text{pH} < 6 = 34$. The analysis of 70,000 soil samples, compared with the yields, show a similar relation. The optimum of growth lies at pH 7.2-7.6. Large districts are badly in need of lime. The quantities of slaked lime needed to bring various types of soil and H-ion concentration to optimum are given. Too much lime is just as injurious as too little.—*B. Nebel (transl.)*.

5803. B., C. A. *Cane cultivation in Porto Rico*. Internat. Sugar Jour. 27: 519-522. 1925.—This is a discussion of a detailed paper by F. S. EARLE on the subject in the title, especially as regards the necessity and effects of tillage and of the implements used for this purpose. Three methods of planting cane are followed in Porto Rico: the Hawaiian system, used mostly on irrigated lands which are not low-lying; the Cuban system, used mostly on dry unirrigated uplands, where no extensive drainage is required; and the "gran banco" system, used on wet lands requiring drainage. These 3 methods are described.—*Nellie E. Fealy*.

5804. BAILLARGÉ. *Sur la culture en ligne des céréales*. [Growing cereals in rows.] Prog. Agric. et Vitic. 77: 88-90. 1921.

5805. BĂLAŞESCU, N. *Cultura macului (Papaver somniferum)*. [Culture of the poppy (*P. somniferum*)] Viața Agric. 14: 460-467. 1923.—Indications on the cultivation of the poppy, taking into account the special conditions of Rumania.—*Emil Pop*.

5806. BALL, CARLETON, R. *Why agronomy needs research in plant physiology*. Jour. Amer. Soc. Agron. 17: 661-675. 1925.—The author discusses problems of the seed, root system, stem and leaves, and inflorescence and fruit.—*F. M. Schertz*.

5807. BALLARD, W. W., AND D. M. SIMPSON. *Behavior of cotton planted at different dates in weevil control experiments in Texas and South Carolina*. U. S. Dept. Agric. Dept. Bull. 1320. 1925.—Data on plant growth and fruiting habits of early and late planted cotton were obtained in side by side comparisons of cotton planted on 4 different dates near San Antonio, Texas, and Charleston, South Carolina in 1923. Also a separate late planting was made in Texas to compare cotton left unthinned with cotton thinned to 2 plants in hills 12 inches apart. The later planted cotton reached the fruiting stage in a shorter time and continued growth later than the early planted. The late planted cotton produced as many as or more squares than the early planted but yields at San Antonio were less, due to greater weevil damage and poor stands. Weevils bred in the early plantings caused excessive injury to the adjacent later plantings. At Charleston, where weevil infestation was less severe, yields of early and late plantings were nearly the same on uniform parts of the field. The separate late planting at San Antonio had much less weevil injury than the later of the successive, adjacent plantings and yielded almost as much as the 1st of the successive plantings. The experiments do not show that later planting is impracticable either in Texas or South Carolina, but from the nature of the problem a wide range of seasonal conditions must be tested before a general advantage can be demonstrated.—*W. W. Ballard*.

5808. BARTELS, L. C. *Lindenow maize variety competition*. Jour. Dept. Agric. Victoria 23: 33-38. 4 fig. 1925.

5809. BASSI, EDOARDO. *Agricoltura d'oggi*. [Agriculture of today.] xviii + 583 p. Illus. C. Tarantola: Piacenza, 1924.

5810. BEESON, M. A. *Wheat continuous with and without manure*. Oklahoma Agric. Exp. Sta. Bull. 140. 1-11. 4 fig. 1921.

5811. BEESON, M. A., ADRIAN DAANE, AND D. R. JOHNSON. *Alfalfa experiment*. Oklahoma Agric. Exp. Sta. Bull. 138. 1-18. 2 fig. 1921.—A general treatise on alfalfa, stressing particularly the results of tests with commercial fertilizers, lime and manure; reports on germination and analyses of several lots of seed; and results of a test comparing row and drilled alfalfa. On the upland, limed plots yielded appreciably more than checks while

manured plots yielded nearly 3 times as much as the checks. On bottom lands liming did not affect yields. Plots treated with commercial fertilizers yielded $\frac{1}{4}$ ton more than checks, but the greatest increase came where manure was used. The 6-year average yield of drilled plots was about $\frac{3}{8}$ ton more than the yield from 42-inch rows.—*H. L. Westover.*

5812. BELLE BALL, G. DE. *Agriculture at the cross roads.* (An analysis of the position.) 27 p. Harrison and Sons, Ltd.: London, 1924.

5813. BOBKO, E. W., UND D. L. ASKINASI. *Bestimmung der Absorptionskapazität und des Ungesättigkeitsgrades der Böden.* [Determination of the absorption capacity and the degree of unsaturation of the soil.] *Zeitschr. Pflanzenernähr. u. Düngung* 6: 99-127. 1925.—A convenient method for determining the absorption capacity of soils is one in which the soil is saturated with Ba and the Ba is afterwards displaced by HCl and determined in the form of BaSO₄.—*F. M. Schertz.*

5814. BOBKO, E. W., B. A. GOLUBEV, UND A. F. TÜLIN. *Zur Frage über die schädliche Wirkung höher Kalkgaben.* [The harmful action of large applications of lime.] *Zeitschr. Pflanzenernähr. u. Düngung* 6: 128-168. 1925.—An excess of lime is not only harmful to turf soil but also to mineral soils, and is especially significant upon uncultivated light mineral soils.—*F. M. Schertz.*

5815. BOHME, HERMANN. *Investigations on the root development of the potatoes of commerce.* *Jour. Landw.* 73: 81-144. 1925.—The following subjects are discussed: depth of roots, significance of worm holes, and relation between parts of the potato plant. There are 169 references.—*F. M. Schertz.*

5816. BOLLEY, H. L. *Test gardens as aid to seed standardization.* *Proc. Assoc. Official Seed Analysts of North America* 1925: 16-17. 1925.—The author recommends the test nursery or garden to all laboratories engaged in seed analysis, seed registration and certification, as a source of great value in all seed standardization work.—*M. T. Munn.*

5817. BOUSQUET, M. *Le nitrate de chaux en agriculture.* [Calcium nitrate in agriculture.] *Prog. Agric. et Vitic.* 78: 545-547. 1922.

5818. BRAID, K. W. [Rev. of: MORSE, R., AND R. PALMER. *British weeds, their identification and control.* 206 p. 8 pl., 32 fig. Ernest Benn: London, 1925.] *Kew Bull.* 1925: 191-192. 1925.—A short appreciation of a useful book.—*T. J. Fitzpatrick.*

5819. BRÉTIGNIÈRE, LUCIEN. *La production du blé.* [The production of grain.] Delagrave: Paris. 1925.

5820. BRIGGS, GLEN. *Cotton variety tests with suggestions for growing cotton under boll weevil conditions.* *Oklahoma Agric. Exp. Sta. Bull.* 141. 1-15. 1923.

5821. BRIGGS, GLEN. *Cotton variety tests in Oklahoma.* *Oklahoma Agric. Exp. Sta. Bull.* 154. 1-12. [1925?].—

5822. BROMLEY, T. A. *Coffee growing in Queensland.* *Queensland Agric. Jour.* 24: 361-368. 1925.—Contains a review of the possibilities of coffee-growing in Queensland, and directions for growing and marketing.—*W. D. Francis.*

5823. BROWN, W. H. *Growing and grading tobacco. Impressions gathered on the Upper Murray.* *Agric. Gaz. New South Wales* 36: 867-872. 1925.—The soils on the flats along the Murray River are comparatively light, sandy and friable in texture and adapted to production of fine-textured, light-colored leaf tobacco. The temperature is uniformly favorable, neither heat nor cold being excessive. The rainfall of 30-35 inches per annum is well distributed. Flue curing is practiced. "Spotting" caused by raising the temperature too fast in curing is a common fault. Lack of finish in the grading is an outstanding defect seen in the packed product. Mold is the principal malady affecting the cured leaf. The season's crop consisted chiefly of mahogany, varying from medium to bright, with a small proportion of lemon and little or no dark leaf.—*W. W. Garner.*

5824. BRUN, DAVID L. *The destruction of star thistle by arsenate of soda.* *Jour. Dept. Agric. Western Australia* 2nd ser. 2: 512. 1925.—Arsenate of soda in 4 different strengths (1 pound in 4, 8, 12, and 16 gallons of water) was used. The indications to date are that spraying with the stronger solution will keep the plant in check and it is suggested that further experiments may show a weaker solution effective.—*P. J. Olson.*

5825. (BUKASOV, S. M.) БУКАСОВ, С. М., КАРПОФЕЛЬ. [Potatoes in U. S. S. R.] (Eng-

lish summary.) Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. & Plantbreed.] 15²: 3-176. 3 col. pl., 12 fig., 2 maps. 1925.—A detailed description of different parts of the plant used in classification. The author considers purple or red color of sprouts as a most constant character and used it is his classification to divide varieties into 2 main groups. Color of tubers and flowers are used for next subdivisions, and shape of leaves for the last. A classification of varieties grown in Russia is given.—*M. Demerec*.

5826. BURNS, W., L. B. KULKARNI, AND S. R. GODBOLE. A study of some Indian grasses and grasslands. Mem. Dept. Agric. India. Bot. Ser. 14: 1-57. 4 pl., 8 fig. 1925.

5827. BUSSE, W. Betrachtungen über die Sorghumhirse und ihre landwirtschaftliche Nutzung. [Sorghum and its agricultural use.] Tropenpfl. 27: 38-55. 1924.—A general description is given of the characteristics of sorghum, its treatment and cultivation in different countries, accordingly to different writers.—*J. C. Th. Uphof*.

5828. CABALLO, B. C. Weeds in the rice fields and their effect on the yield of grain. Philippine Agric. 14: 359-371. 3 fig. 1925.—Two separate crops of rice were planted under 3 different cultural conditions—"caingin" (recently cleared forest land), upland, and lowland. Each cultural field was divided into 3 plots, 1 of which was extensively weeded, the 2nd weeded only once during the growing period, and the 3rd not at all. The entire crop for both plantings was harvested, weighed, and the amount of straw and grain determined. In each field the highest yield of grain was produced from the intensively weeded plot. The plot that had been weeded once produced a smaller crop, and that not weeded at all produced the smallest yield. Weight of straw in all cases was proportional to yield of grain. A record of the number of species of weeds and the dominant species found under each cultural condition is also given.—*Bessie Goldstein*.

5829. CALL, L. E., R. M. GREEN, AND C. O. SWANSON. How to grow and market high protein wheat. Kansas Agric. Exp. Sta. Circ. 114. 1-21. 1925.—The factors involved in producing high-protein wheat are discussed.—*L. E. Melchers*.

5830. CARBONEL, J. Esquisse agronomique et agrologique de la region de Setif. [Agronomic and agrologic sketch of the Setif Region.] 73 p. Univ. Algeria: Algeria, 1922.

5831. CARLSON, F. A. Brazilian agriculture. Jour. Amer. Soc. Agron. 17: 725-730. 1925.—The agricultural resources are considered in 3 groups: the money group, the staple food group and the livestock group.—*F. M. Schertz*.

5832. CARNE, W. M., AND C. A. GARDNER. Cockspur thistle (*Centaurea melitensis* Linn.). Jour. Dept. Agric. Western Australia 2nd ser. 2: 495-496. 1 fig. 1925.—The plant is described and its distribution noted. It is not a noxious one, but has a bitter flavor which, together with its spines, makes it disagreeable to stock. Systematic farming including clean fallows and the running of sheep will probably keep it in check.—*P. J. Olson*.

5833. CARNE, W. M., AND C. A. GARDNER. Patterson's curse (*Echium plantagineum*). Jour. Dept. Agric. Western Australia 2nd ser. 2: 487-488. 1 fig. 1925.—The history of this plant in Western Australia and a taxonomic description are given. The objection to the plant in cereal crops is that it crowds out the growing crops and interferes with harvesting operations. While it has some value as fodder, this is true only in the event of scarcity of feed.—*P. J. Olson*.

5834. CARNE, W. M., C. A. GARDNER, AND A. B. ADAMS. The annual birdsfoot trefoils (*Lotus angustissimus* and *L. hispidus*). Jour. Dept. Agric. Western Australia 2nd ser. 2: 509-512. 1 fig. 1925.—These 2 plants are described taxonomically and their distribution is given. The former is recommended for heavy, wet land which becomes dry in summer. It is also recommended for sowing with subterranean clover, because it comes into vigorous growth as the latter goes to seed. 3 pounds per acre is recommended as sowing rate for a "seed patch." From here the seed is swept up when ripe and sown in other paddocks. On account of a large percentage of hard seed there will ordinarily be a poor "stand" the 1st year, but with reasonable care this will increase annually. *L. hispidus* resembles *L. angustissimus* very closely but is a stronger grower in suitable situations and is also somewhat later. Recommendations as to sowing and other treatment are the same for both plants.—*P. J. Olson*.

5835. CESARI, R. La produzione del grano nell'Italia antica. [Production of grain in ancient Italy.] Geographia 1923²: 1923.

5836. CHAMBLISS, CHARLES E. **An unused southern wild plant.** Rice Jour. 29: 11-14. 4 fig. 1925.—There is a large acreage of wild rice (*Zizania palustris*) on the Atlantic Coastal Plain which supplies food for millions of wild ducks and many other marsh-loving birds. In this area it grows on the mud flats and low marsh land that border the tidal streams above brackish water. The seed of this wild plant should be gathered by the seedsmen of these southern states to supply the needs of the southern hunter, who at present can only obtain seed of the northern species of wild rice (*Zizania aquatica*). The northern species matures too early in the Southern States to serve as shelter for game birds, and in this section it also is less productive than the southern species. Beside supplying food for our game birds, this southern wild plant should also be used as a source of food for man. The aborigines of the Southern Atlantic Coastal Plain probably never used this plant or the value of wild rice seed as a food would have been brought to the attention of the early explorers, as it was to the first Europeans who went into the region of the upper Mississippi Valley. Here the white man found that among certain Indian tribes the seed of *Zizania aquatica* was one of the principal articles of diet. Today the descendants of these Indians gather this seed.—*Author*.

5837. CHAMBLISS, CHARLES E., AND J. MITCHELL JENKINS. **Experiments in rice production in southwestern Louisiana.** U. S. Dept. Agric. Dept. Bull. 1356. 1-32. 9 fig. 1925.—The successful development of rice culture in southwestern Louisiana has been due principally to suitable soils underlain by an impervious subsoil, topography, precipitation and temperature. These natural factors are discussed. The experimental data show that when rice land is plowed in winter to the depth of 5-7 inches and the seed sown approximately May 14 on a smooth seed bed by a drill to the depth of 1 inch at the rate of 80 pounds per acre, yields are increased. The largest yields of rice in the fertility experiments were obtained not by the use of fertilizers but by growing the crop in rotation with soybeans. With the exception of dried blood and sulphate of potash alone and in combination with sulphate of ammonia, the use of commercial fertilizers did not increase rice yields on Crowley silt loam, whereas the turning under of the mature soybean plants greatly increased yields and put the soil in a loose and friable condition. In the irrigation experiments, the largest average yields were obtained on land that was submerged 15 days after the rice plants emerged. A submergence of 8 inches probably is the greatest depth of water that is ever necessary, while a depth of 6 or even 4 inches may be sufficient if submergence can be easily maintained. During submergence in July, August and September the average daily loss of water by transpiration from a rice field is much greater than by evaporation. The Biloxi soybean is better adapted to rice field conditions than any other variety tested during the 12-year period (1912-1923) at Crowley and was used in the rotation experiments. The frequent cultivation required for soybeans will destroy many weeds, especially red rice. If continued throughout 5 soybean crop years, the worst rice-field weeds may be brought under control or completely eradicated. During this period it will not be necessary to have an unproductive acre of land at any time.—*Author*.

5838. CHAMPLIN, MANLEY. **Crop rotation problems in Saskatchewan.** Jour. Amer. Soc. Agron. 17: 646-650. 1925.—A crop rotation of oats and wheat does not provide for maintaining the N supply or the organic matter of the soil. Plans for soil improvement are discussed.—*F. M. Schertz*.

5839. CHAMPLIN, MANLEY, AND T. M. STEVENSON. **Results of experiments in the use of intertilled crops versus fallow as preparation for wheat production in Saskatchewan and Western Manitoba.** Jour. Amer. Soc. Agron. 17: 807-812. 1925.—It is possible to replace a part of the fallow with intertilled crops.—*F. M. Schertz*.

5840. CHAPMAN, PAUL WILBUR, CHAUDE WILBUR EDGERTON, J. G. LEE, JR., L. M. SHEFFER, AND ROY H. THOMAS. **Farm crops.** viii + 550 p. Turner E. Smith Co.: Atlanta, Georgia, 1925.

5841. CLARK, J. ALLEN. **Varietal experiments with hard red winter wheats in the dry areas of the western United States.** U. S. Dept. Agric. Dept. Bull. 1276. 1-47. 1925.

5842. COLLINGS, GILBEART H. **Peculiar morphological characteristics of the stalks of barren corn plants.** Jour. Amer. Soc. Agron. 17: 618-19. 1925.—To determine accurately the true status of a plant as to barrenness the sheath of a leaf must be stripped from the culm.—*F. M. Schertz*.

5843. CORMANY, C. E. **Plant early potatoes at proper time.** Michigan Agric. Exp. Sta. Quart. Bull. 5: 126-128. 1 fig. 1923.—Beginning April 29th, weekly plantings were made of Early Ohio and Irish Cobbler potatoes, both early varieties. The earliest plantings gave best yields and highest percentage of marketable tubers.—*Ernst A. Bessey.*
5844. COWGILL, H. B. **A new variety of sorgo having recurved peduncles.** Jour. Amer. Soc. Agron. 17: 533-537. 1925.—The new type of sorgo, which is described, has been designated Fort Smith Gooseneck.—*F. M. Schertz.*
5845. COX, J. F. **Dependable Michigan crop varieties.** Michigan Agric. Expt. Sta. Spec. Bull. 109. 1-19. 10 fig. 1921.
5846. COX, J. F. **Manitou Island Rosen rye.** Michigan Agric. Exp. Sta. Quart. Bull. 3: 41-43. 3 fig. 1920.—Because of the fact that rye is open-pollinated it has been necessary to grow Rosen rye at a distance from fields of other sorts. On the island of South Manitou, Lake Michigan, 10 miles from the mainland, the farmers have all agreed to grow only Rosen rye, thus providing a source for considerable quantities of pure seed.—*Ernst A. Bessey.*
5847. COX, J. F. **Michigan grown alfalfa seed.** Michigan Agric. Exp. Sta. Quart. Bull. 5: 17-18. 1922.—It is estimated that in the spring of 1925 "at least 175,000 pounds of home grown seed were used in Michigan."—*A. J. Pieters.*
5848. COX, J. F. **The Lebeau alfalfa.** Michigan Agric. Exp. Sta. Quart. Bull. 5: 113-115. 1923.—A brief account of a race of common alfalfa introduced into Monroe County, Michigan, about 1886 and proving to be of superior resistance to cold as compared with the usual strains of alfalfa.—*Ernst A. Bessey.*
5849. CROCKER, WM. **Points of agronomic interest in the physiology of germination.** Jour. Amer. Soc. Agron. 17: 696-705. 1925.—The rest period, disinfectants and stimulants, curing and storing are discussed.—*F. M. Schertz.*
5850. DARESSY, G. **Le riz dans l'Egypte antique.** [Rice in ancient Egypt.] Bull. Inst. Egypt (Tome premier Session 1920-1921) 4: 35-37. 1921.
5851. DEMETROVICI, M. **Cultura orezului in Banat.** [Culture of rice in the Banat.] Buletinul Agric. 4: 185-192. 1923.—Since 1716 rice has been cultivated in the south of the Rumanian Banat, with various results and many interruptions. The only place where it is cultivated today is Topolia (District of Timiş), but the conditions of vegetation as well as production prove that its cultivation may be extended also to other regions of Rumania with similar climate and hydrographic conditions.—*Emil Pop.*
5852. DEMOLON, A., ET R. MONBRUN. **Essais culturaux sur divers engrais azotés.** [Cultural trials of different nitrogenous fertilizers.] Prog. Agric. et Vitic. 82: 474-475. 1924.—On oats, NH_4Cl , NaNO_3 , $(\text{NH}_4)_2\text{SO}_4$ and urea were used. Urea was slightly inferior to the other 3.—*E. L. Proebsting.*
5853. DENAÏFFE, HENRI. **Les blés cultivés. 1. La stachymetrie—2. Étude morphologique de l'épi.** [Wheat: Stachymetry; morphological study of the awn.] 2nd ed. rev. 151 p. P. Dupont: Paris, 1922.
5854. DIRKS, B. **Über ein Verfahren zu der Ermittlung des Düngebedürfnisses an Stickstoff in Böden.** [A method of testing the nitrogen requirement of a soil.] Zuckerrübenbau 7: 160-165, 188-190. 1925.—Analyses from long-continued field experiments show that yields vary with the ammonia and amino-nitrogen (NH_2) found. Data from analyses show the following: Soon after harvesting (continuous rye experiment), the soil contains but little N in any form (NH_3 , NH_2 or N_2O_3). From harvest until seeding time the NH_3 and acid-amino-N increase. Nitrates were not largely found in these experiments. The quantity of the different N-forms determined shortly before seeding time is an exact measure of the N-supply of the plants for the following year, if the other soil characters are considered. The NH_3 absorbed by the soil is used to better advantage by the plants than is the acid-amino-N. Beets always take up acid NH_3 nitrogen; rye does so only in favorable seasons. The 1925 crop represented the difference in the N analyses of the 2 samples taken in the beginning and at the end of the season. A detailed description is given of the methods of analysis.—*B. Nebel (transl.).*
5855. DODDS, H. H. **Developments in the South African Sugar Industry.** South African Sugar Jour. 9: 611, 613, 615. 1925.—Data regarding the climate of Natal, especially as it

relates to the production of sugar, and the merits and demerits of Uba cane with reference to soil, climate, diseases, pests, milling qualities, irrigation, and fertilization, are set forth and briefly discussed.—*Nellie E. Fealy.*

5856. DODDS, H. H. Report of Director of Experiment Station for Dec. 1925. South African Sugar Jour. 9: 787-788. 1925.—The varieties of sugar cane received at the station are listed and a fertilizer experiment is described as planned. This is to include the use of various forms of phosphate, of nitrogen and potash alone or in complete fertilizer and in various proportions. In these experiments only carefully selected streak-free cane was planted.—*Nellie E. Fealy.*

5857. DODDS, H. H. South African Sugar Association. Report of Director of Experiment Station for September. South African Sugar Jour. 9: 621-623. 1925.—Mosaic disease was reported as having been discovered in Mauritius on plants originating from cuttings from India. Cane grown in green-manure plats, especially those in which buckwheat and cow-peas were grown, was markedly superior to that in adjacent control plats. Blue lupins and Sunn hemp are very promising for early spring planting, but are not recommended for very late planting in light, sandy soil.—*Nellie E. Fealy.*

5858. DODDS, H. H. South African Sugar Association. Report of Director of Experiment Station for October and November, 1925.—South African Sugar Jour. 9: 753. 1925.—The history of the first streak disease experiment at Umbogintwini is briefly reviewed and it is shown that there is a loss of 10.9% in weight per acre and 14% in weight per stalk from planting streak diseased sets.—*Nellie E. Fealy.*

5859. DOUGLAS, CHARLES E. Rice, its cultivation and preparation. 143 p. illus. I. Pitman & Sons, Ltd: London, 1924.

5860. DOWN, E. E. Sugar beet seed testing. Michigan Agric. Exp. Sta. Quart. Bull. 5: 120-121. 1 fig. 1923.—A brief report on the yield and sugar content of sugar beets from foreign and home-grown seed. The yield of the latter is slightly greater but the percentage of sugar is slightly less. Both lots are inferior to the Standard seed produced in Canada.—*Ernst A. Bessey.*

5861. DOWN, E. E. Sugar beet varietal series. Michigan Agric. Exp. Sta. Quart. Bull. 6: 89-91. 1 fig. 1924.—Beets from American grown seed out-yielded those from European seed but were inferior in sugar content and purity. As with previous tests the best variety was Canadian.—*Ernst A. Bessey.*

5862. DUGGAR, JOHN FREDERICK. Southern forage crops. 283 p. The Macmillan Co.: New York, 1925.

5863. DUNCAN, J. R. Three good corn varieties. Michigan Agric. Exp. Sta. Quart. Bull. 5: 122-123. 1 fig. 1923.—Trials of 3 corn varieties in 1922 made by cooperating farmers showed, (1) that the golden glow is a safe, dependable variety of corn throughout most of the region as far north as Traverse City; (2) that the M. A. C. Yellow is a very high-yielding variety and matures well up to and in the central part of the State and (3) that the Duncan yellow dent is well adapted to southern Michigan and maintains its yielding ability. Its range of adaptability extends much further north than formerly.—*A. J. Pieters.*

5864. EGYPT, DEPT. OF AGRICULTURE. The method employed by the State domains for producing and maintaining their high standard of sakel cotton. Government Press: Cairo, 1922.

5865. EHRENBERG, PAUL. Zur Frage der Schädigung der Zuckerrübenenernten durch übermässige Kalkdüngung. [The damage done to the sugarbeet crops by excessive liming.] Zuckerrübenbau 7: 53-66. 1925.—The writer seeks to show the causes of bad crops in Silesia. The fields inspected had all been highly fertilized with lime. During war-time the high lime supply had a bad influence upon the taking up of K_2O , as analyses show. This however could not be the cause of damage. Neubauer's analyses also showed a sufficient supply of K_2O and P_2O_5 in the soil. The yields from the fields in question did not decrease immediately after the application of lime, but some years later. The reaction in the soil caused by manuring, and fertilizers such as $NaNO_3$, $(NH_4)_2SO_4$, P, and K, are blamed. The unhindered formation of bicarbonic soda will result in damage. Also, the reactions of the other fertilizers, under sufficient supply of CO_2 from the manure, lead to carbonic and bicarbonic soda and to

an increase of the alkaline character of the soil fluid. The greatest damage is done when rain falls in summer after a period of drought, as then the highest pH values are obtained.—*B. Nebel (transl.)*.

5866. ELAZARI-VOLKANI, I. The transition from primitive to modern agriculture in Palestine. 52 p. Palestine Economic Soc.: Tel-Aviv, 1925.—An address.

5867. ENESCU, M., AND I. ANGANU. Cercetări asupra semințelor străine ce conțin trifoiurile roșii și lucernele noastre de semănță. [Researches on foreign seed contained in our red trefoil and lucerne.] Buletinul Agric. 5: 81-89. 1924.—Here are given the results of the first determinations of foreign seed contained in these legumes, in order to establish the source of these plants.—*Emil Pop*.

5868. EVANS, G. Comparative trials with ratoon and annual upland cotton carried out by the Queensland Department of Agriculture in 1924-25. Queensland Agric. Jour. 24: 523-532. 1925.—Results for this season are conclusive so far as forest alluvial soils are concerned. The annual plots in each case gave very much bigger yields and greater profits than the ratoon. The method of ratooning indicates that no better results are to be anticipated from stand-over cotton than from bushes that have been ratooned to ground level or to about 8 inches. The ratoon plots acted as a breeding ground for all the principal pests early in the season. The difficulty of picking was much greater in the ratoon than in the annual. It was the definite opinion of the experts of the Department that the ratoon cotton was the inferior in drag and luster and was also somewhat shorter in staple.—*W. D. Francis*.

5869. EVANS, G. Experimental work on cotton on certain Queensland State Farms during 1924-25. Queensland Agric. Jour. 25: 133-177. 77 pl. 1925.—The article consists chiefly of the Annual Reports of the Callide Cotton Research Station at Biloela, the Monal Creek Cotton Experimental Farm in the Upper Burnett and a section of the Gatton Agricultural College and High School devoted to Cotton Growing.—*W. D. Francis*.

5870. FAUCHERE, A. Guide pratique d'agriculture tropicale. II. Les grandes cultures. Introduction, Arachide. [Practical guide to tropical agriculture. II. Field crops. Introduction, Peanuts.] Augustin Challamel: Paris, 95 p. 1921.

5871. FLEISCHMANN, RUDOLF. Ein Messgerät zur Bestimmung der Korndicke. [A measuring apparatus for determination of grain-diameters.] Zeitschr. Pflanzenzucht. 10: 466-468. 1 fig. 1925.—This device consists of a series of tuning-fork-like double brass bars, widely separated above but approaching below to a precise interval, which varies in the different bars. These bars are placed in a vertical rack, the bars with widest intervals above; those with narrowest intervals below. Seed are arranged side by side in a shallow wooden trough, and then turned into the top split bar. The largest seed are retained; the smaller ones go through and those of different sizes are retained at successive levels. The seed at each level are counted.—*Charles B. Davenport*.

5872. FORBES, R. H. Plant Introduction. Sultanic Agric. Soc. Bull. 10. 1-64. 6 pl. 1923.—A brief list is given of the agricultural plants grown in Ancient Egypt. Egypt is credited with having a richer flora of agricultural plants than any other region in the world of equal extent, some 193 economic species. Seed of about 800 varieties of plants were introduced by the author in 1918, largely from Arizona. Weather observations are given for the upper Delta of Egypt and for Arizona. The most noticeable difference in these records is the much greater humidity in Egypt. In general, however, there is much resemblance in the weather conditions. Brief descriptions are given of the work done on those varieties which seem to be worthy of more extended trial in Egypt, and similar accounts are given of many of those plants which do not seem to be worthy of general introduction. Of the introductions which seem to be of value to the country is the Moki Lima Bean. This is a semi-dwarf, the seed of which the author secured from the Moki Indians just before coming to Egypt. For description of this bean see *Ibid.* Bull. 9. 1921.—*W. C. McQuiston*.

5873. FORBIN, V. La canne à sucre en Indochine. [Sugar cane in Indochina.] La Nature 1922²⁵⁰⁷: 241-243. 1922.

5874. FOSTER, L. D. Testing of New Zealand grown wheats. New Zealand Jour. Agric. 31: 296-301, 375-383. 4 fig. 1925.

5875. FOY, NELSON R. Chewings fescue. History, seed production and seed export

problems. New Zealand Jour. Agric. 31: 356-370. 3 fig. 1925.—Chewings fescue (*Festuca rubra* var. *fallax*) is a valuable grass, but the seed loses its vitality in a relatively short time. Experiments have shown that seed vitality is greatly improved by allowing the seed to mature for about 3 weeks longer than usual.—N. J. Giddings.

5876. FRECKMAN, SIEGERT-LANDSBERG W. Ausnutzung verschiedener Wassermengen durch verschiedene kartoffelsorten. [Use of varying amounts of water by different potato varieties.] Mitteil. Deutsch. Landw. Ges. 40: 997-1003. 1925.—The rainfall in 1922, 1923, and 1924 was 16.02, 10.55 and 11.1 inches, respectively, and in those years supplemental irrigations of 0.79 and 2.76 inches; 1.57 and 3.54 inches and 3.2 and 6.3 inches gave increases of 57, 128 and 69 bushels, and 104, 80 and 138 bushels over the controls for the respective years. The controls yielded 349, 338 and 402 bushels in 1922, 1923 and 1924. The starch content was a little lower for the irrigated potatoes in the first 2 years but higher in the last year; 8 commercial varieties were used.

5877. FRUWIRTH, C. Wiesenverunkrautung in Niederösterreich. [Weed infestation of meadows in lower Austria.] Wiener Landw. Zeitg. 75: 420-421. 1925.

5878. GERICKE, W. F. Relation between certain heritable properties of wheat and their capacity to increase protein content of grain. Jour. Agric. Res. 31: 67-70. 1925.—The rate at which wheat varieties ripen after being supplied with a given amount of available N and the ratio of grain to total dry weight were found to be correlated with capacity to increase the protein content of the grain. Since the protein content varied directly with progressively later application of N to the plants until a given growth phase was obtained, it was held that correlation between these circumstances indicated causal relation. The ratio of grain to total dry matter is considered an expression of the power of the variety to utilize absorbed material for grain production. Hence the greater this value, the greater the efficiency of the plant to utilize a given quantity of N for protein in grain. The relation between the order of ripening of the varieties after N was supplied and that of their capacity to increase the protein content of the grain was considered to indicate that the shorter the period in which a variety utilizes a given amount of N, the greater the efficiency of the variety to utilize N for protein in grain. It was pointed out that any one of these genetic factors does not necessarily *per se* connote a high protein wheat. Whether or not a high protein grain obtains, was said to be conditioned by the genetic complex of the variety. This involves both the lowest possible percentage of protein a variety is capable of producing, and its capacity to increase the protein content of the grain when a given supply of N is available.—Author.

5879. GIBSON, A. P. [Report of northern field assistant, Bureau of Sugar Experiment Stations.] Australian Sugar Jour. 17: 575-577. 1925.—Undue delay in ratooning often results in loss of ash or inorganic matter, the ground becomes so refractory that subsequent intertillage is inferior, the new root system developed is severed, thus retarding crop growth. The principal variety of cane grown in the northern district is Badila, "and at present there is not a more suitable all-round cane;" D.1135 and H.Q.426 do well as a rule on the poorer soils. The former is deep-rooted, consequently freer from the ravages of grubs, while the latter is the reverse and is most susceptible to gum; B.147 is susceptible to disease. Mosaic occurred in a patch of corn grown for green manure.—Nellie E. Fealy.

5880. GIRARD, A. C. La pomme de terre et le topinambour. [The potato and the Jerusalem artichoke.] Prog. Agric. et Vitic. 84: 572-574. 1925.—Because of much higher yields and freedom from degeneration, it is suggested that the artichoke be grown instead of the potato. Yield data for these crops on different soils for 5 years are given.

5881. GOOT, P. VAN DER. Levensduur en opbrengst van sawah-padi in verband met ouderdom der bibit, planttijd, E. A. factoren. [Length of life and yield of sawah-padi (rice) in relation to age of seedlings, time of planting and other factors.] (Buitenzorg. Inst. voor Plantenziekten. Mededeel. 60.) 51 p. Drukkerijen Ruygrok & Co.: Batavia, 1923.

5882. GORE, H. C., H. C. REESE, AND J. O. REED. Production of sirup from sweet potatoes. U. S. Dept. Agric. Dept. Bull. 1158. 1-33. 1923.

5883. GOSS, W. L. Variations in germination tests of vegetable seeds. Proc. Assoc. Official Seed Analysts of North America 1925: 40-41. 1925.

5884. GRESS, E. M. Pennsylvania weeds. Bull. Pennsylvania Dept. Agric. 8²⁰: 1-27. (General Bull. 416.) 14 fig. 1925.

5885. GROTKAR, R. E. Achard und die ersten Anfänge des Baues und der Züchtung von Zuckerrübensamen. [Achard and the beginning of the growing and breeding of sugar-beet seed.] Zuckerrübenbau 7: 157-160. 1925.—Reprint of a paper by Achard, 1810.—*B. Nebel (transl.)*.

5886. GUSMÃO, HUMBERTO. Contribuição ao estudo das leguminosas do E. do Rio e Districto Federal segundo o material existente no herbario do Museu Nacional e a "Flora Martius." [Leguminosae of Rio and the Federal District (Brazil).] Bol. Museu Nacion. Rio de Janeiro 1: 425-453. 1925.—A list of species, giving a short description of each, with the localities from which it has been reported in the State of Rio de Janeiro and the Federal District.—*Edith K. Cash*.

5887. HALL, A. D. Agricultural research in relation to the community. Science 61: 399-403. 1925.

5888. HARREVELD, J. VAN. Java cane variety statistics [Java Archief]. Australian Sugar Jour. 17: 525. 1925.—A table giving the percentage of the total Javan sugar acreage planted to different varieties shows that E.K.28 is by far the most popular variety, representing 43.75% of the total cane area, while D.I.52, second in popularity, represents 22.50%.—*Nellie E. Fealy*.

5889. HARRISON, J. B. Food plants of British Guiana. Jour. Bd. Agric. British Guiana. 19: 18-51. 1925.—A list of the food plants in British Guiana, with brief notes on their uses.—*J. P. Jones*.

5890. HAY, W. D. Does artificial tripping of alfalfa blossoms increase seed-setting? (Preliminary report.) Sci. Agric. 5: 289-290. 1925.—It was found that 9.48% of the artificially tripped and 5.94% of the untripped flowers formed seed pods. The data also showed that time of day and flower color are not factors in influencing seed pod setting in alfalfa.—*T. G. Major*.

5891. HENKE, L. A. Seventh Annual Report of the Agricultural Department. Univ. Hawaii Quart. Bull. 4¹: 3-20. 1925.—The report covers the period from July, 1923 to June 30, 1924. Yields of alfalfa, cassava, corn and cow peas are given. Experiments on growing alfalfa with mulching paper and other materials are reported. These tests were inclusive on account of the small size of the plots. Observations on the rate of node formation and rate of growth in sugar cane and the results of physical tests of University Farm soils are reported.—*H. F. Bergman*.

5892. HENRY, HELEN H. Color and weight of red clover seed as indications of origin. Proc. Assoc. Official Seed Analysts of North America 1925: 19-27. 1925.—On the basis of incidental seed content, red clover seed, as used in the U. S. A., can be distinguished as coming from 8 different regions: North Central U. S. A.; Willamette Valley, Oregon; Idaho and Eastern Washington; Chile; England; France; Italy and Central Europe. On a basis of color, it may be possible to distinguish seed from parts of these larger regions, so that if these differences in color are constant and definite enough the number of regions recognized will be increased. Six tables show results obtained from a study of numerous samples of known origin. The author concludes that owing to the practice of grading, the weight of 1000 seed is not to be depended upon as an indication of origin. Continued study of more samples would show the maximum weight of 1000 seed for samples from each region. The weights given in the table indicate that when 1000 seed, counted from seed graded as described, weigh over 1,750 gm. the seed was grown in either Chile or Poland. On a basis of the samples examined, when it is known that a sample is either entirely French or Italian grown, the seed can be identified by finding the number of seed of Grade 0 or the total number of seed of Grade 0 and Grade 1 in 1000 seed, using graded seed as described, and comparing with the figures given. The complete color analysis of samples shows differences which would probably be constant in every sample. Samples from all producing regions should be studied as to their significance in determining the source of the seed.—*M. T. Munn*.

5893. HERTEL, HANS. A short survey of agriculture in Denmark. B. Luno: Copenhagen, 1925.

5894. HILGENDORF, F. W. Pasture plants and pastures of New England. 2nd ed., 93 p. Whitcombe and Tombs, Ltd.: Melbourne, Auckland, and London, 1923.

5895. HILLMAN, F. H. Distinguishing characters of the seeds of certain species of *Brassica*. Proc. Assoc. Official Seed Analysts North America 1925: 19. 1925.—This paper presents the means employed at the Federal Seed Laboratory in distinguishing the seed of winter rape (*Brassica napus*) and certain other kinds, by utilizing the characteristics evident to the naked eye or with hand lens, and also with the compound microscope. The surface features considered are the palisade cell ends, the reticulation and the condition of the epidermal tissue.—*M. T. Munn.*

5896. HILLMAN, F. H. Educating the seedsman in seed testing. Proc. Assoc. Official Seed Analysts North America 1921: 28-30. 1923.

5897. HINDORF, R. J. Der sisalbau in Deutsch-Ostafrika. [Sisal culture in German East Africa.] D. Reiner: Berlin, 1925.

5898. HITIER, H., P. EBERHARDT, ET L. GARAPON. La culture du blé. Amélioration des rendements par le nettoyage des terres et la sélection des semences dans les régions déservies par le réseau P. L. M. [Culture of grain. Improvements in yields by cultivation and seed selection in the region served by the P. L. M. Co.] 21 p. Publ. Agric. la Cie P. L. M., 1922.

5899. HOLDEFLEISS, P. Das Refraktometer als Hilfsmittel bei Rübenuntersuchungen. [The refractometer as an aid in testing beets.] Zucherrübenbau 7: 112-122. 1925.—As fodder-beets contain large amounts of substances turning the level of polarized light to the left but which, nevertheless, are of high nutritive value, it is advisable to test these beets by their content of dry matter in the juice, measured by the refractometer. Instruments for obtaining the juice are the hollow borer and the knee-armed level-worked press from P. Polikeit, Halle. A few drops of juice suffice for this method. Data show that results from polarizing and from the refractometer agree. Polarizing is of chief interest, but the refractometer may well serve as a preliminary test early in the season. For fodder-beets the refractometer is by far the more certain test for value.—*B. Nebel (transl.).*

5900. HOLMES, F. S. A provisional seeding value index for field seeds. Proc. Assoc. Official Seed Analysts North America 1925: 43-44. 1925.—A provisional index based upon percentages of purity, germination and weed seed, and the number of noxious weed seed per ounce, is proposed for the direct comparison of the quality of a lot of seed with that of another, or with other analyses made upon the same bulk of seed. The index is based upon the essential qualities of the bulk in question and is not to be confused with the term "agricultural value" as applied to seed.—*M. T. Munn.*

5901. HOLZAPFEL, HERM., JR. Unkrautvertilgungsmittel "Unkraut Ex." [Destruction of weeds with "Unkraut Ex."] Gartenwelt 29: 692-693. 1925.

5902. HORNE, H. The extension of cotton cultivation in Tanganyika Territory. 48 p. Empire Cotton Growing Corporation: London, 1922.

5903. HOWARD, A., AND G. L. C. HOWARD. Drainage and crop production in India. Jour. Bd. Agric. British Guiana 18: 84-92. 1925.—A discussion of some problems in drainage without experimental data.—*J. P. Jones.*

5904. HOWARD, GABRIELLE L. C., (Editor). The improvement of fodder and forage in India. (Papers read before a joint meeting of the Sections of Agriculture and Botany, Indian Science Congress, Lucknow, 1923.) Bull. Agric. Res. Inst. Pusa. 150. 1923.

5905. HUTCHESON, R. F. Milling of Uba cane in Natal. Internat. Sugar Jour. 27: 632-637. 1925.—In recent years engineers and designers have given Uba cane the attention it demands, with the result that by alterations and additions to crushing plants 90% of sugar is now extracted from the cane. Reasons for the difficulty of handling Uba are mentioned and the adjustment of conditions so as to handle it to the best advantage and the improvements effected are indicated. The principal factors which favor extraction are discussed.—*Nellie E. Fealy.*

5906. HUXDORFF, WERNER. Untersuchungen über Entwicklung und Zusammensetzung der Kartoffelpflanze unter dem Einfluss verschiedener Düngung. [Investigation of the development and composition of potato plants under the influence of different fertilizers.] Jour. Landw. 73: 177-212. 1925.—The subjects discussed are: The influence of the vegetation period upon the formation of the potato plant; the dry weight and the composition of the ash

of the plants; the influence of fertilizers upon the formation of the plants; microscopical investigation of the stems and tubers; and the influence of fertilizers upon the dry weight and composition of the ash.—*F. M. Schertz.*

5907. IAMANDI, I. Este posibilă cultura bumbacului în România? [Is the culture of cotton possible in Rumania?] *Viața Agricola* 16: 7-14, 41-43, 107-111, 241-245, 269-275. 1925.—The author shows in detail the conditions under which this plant may be successfully cultivated, and comes to the conclusion that extensive culture of cotton, especially of Egyptian cotton, cannot be profitable in Rumania.—*Emil Pop.*

5908. IMATONG, S. B. The effect of distancing on tobacco leaf. *Philippine Agric.* 13: 289-297. 1924.—Under Philippine conditions, different varieties of tobacco (*Nicotiana tabacum*) seemed to require different distances in planting. Maximum spacing did not always produce maximum height of plants. The size of the leaves was affected by distance of planting; many small leaves were produced when tobacco was planted as close as 40 by 40 cm., but larger leaves were produced when the distance was from 50 by 75 cm. to 100 by 100 cm. The greatest calculated weight of leaves per ha. was obtained from close planting. The burning quality of the leaves produced in close planting was generally best. With close planting, the leaves were thinner and smaller veined.—*S. F. Trelease.*

5909. IMPERIAL INSTITUTE, DIRECTOR. Henequen fibre or Mexican sisal hemp. *Bull. Imp. Inst.* 23: 17-32. 1925.—A rather full account is given of the henequen industry in Yucatan, including description of the plant and its varieties, mode of cultivation, pests, extraction of the fiber, and cost of production.—*L. A. Kenoyer.*

5910. IMPERIAL INSTITUTE, DIRECTOR. The cultivation, preparation and utilization of the groundnut. *Bull. Imp. Inst.* 23: 291-330. 1925.—A revision of an article published in the same journal in 1910, reprinted in view of the great importance of *Arachis hypogaea* in parts of the British Empire.—*L. A. Kenoyer.*

5911. JACOB. Die Kalidüngung der Zuckerrübe. [Fertilizing sugar beets with potash.] *Zuckerrübenbau* 7: 125-137, 147-150. 1925.—The plant needs K, not directly but in its capacity to render effective the assimilation of carbonates. The sugar content increases when K is applied; N will have no influence unless K is available in sufficient quantity. Ripening is hastened by K. Ample fertilizing prevents damage from nemas. On sandy soils salts of low K-content may be used; on clayey soils salts of 40% K₂O are better.—*B. Nebel (transl.).*

5912. JENSEN, T. L. Winter wheat studies in Montana with special reference to winter-killing. *Jour. Amer. Soc. Agron.* 17: 630-631. 1925.—In Montana 14% of the annual winter wheat acreage has been abandoned in the spring on account of winter-killing.—*F. M. Schertz.*

5913. JIMENEZ, A. L. The effect of manganese compounds on the growth and yield of rice as shown by pot cultures. *Philippine Agric.* 13: 299-305. 1924.—Manganese dioxide, sulphate, and chloride at certain concentrations proved beneficial to the growth and yield of both grain and straw of rice (*Oryza sativa*) in soil cultures. Lime seemed to counteract any beneficial effect of manganese, and to accentuate its detrimental effects.—*S. F. Trelease.*

5914. JOHNSON, E. R., AND E. D. STRAIT. Farming the logged-off uplands in western Washington. U. S. Dept. Agric. Dept. Bull. 1236. 1-36. 1924.

5915. JONES, C. BRYNES. The history of agriculture in Wales. *Welsh Jour. Agric.* 1: 5-6. 1925.

5916. KAISENBRECHT. Russlands Zuckerproduktion. [Russia's production of sugar.] *Zuckerrübenbau* 7: 137-139. 1925.—Russia produced 105.4 mil. pounds of sugar in 240 factories in 1914 and 22.7 mil. pounds in 110 factories in 1923. The most efficient factories are combined in the Sugar Trust. Breeding and seed production are conducted at 22 stations. All seed is cleaned in Winnitza. Beets are not attacked by pests of any kind in Russia.—*B. Nebel (transl.).*

5917. [KHRENNIKOV, E. V.] Хренников, Е. В. Некоторые вопросы методики лабораторного исследования сах. свекловичи. [Certain problems on the methods of examining sugar beets in the laboratory.] *Бюл. Сорт.-Сем. Управ. Сахаротреста.* [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 27-35. 1924.—This paper gives the results of tests made with different kinds of apparatus used in the sugar beet laboratory. The time for sugar extraction was determined when sieves having holes of different size were used, experi-

ments with Kiel-Dolle drill were made, and a Kiel-Dolle grater was tested. Tests made for the purpose of determining the best angle to take a sample from a sugar beet showed that samples taken at 45° gave the best results.—*M. Demerec.*

5918. KIESSELBACH, T. A. Winter wheat investigations. Nebraska Agric. Exp. Sta. Res. Bull. 31. 1-149. *Illus.* 1925.—The results of extensive investigations pertaining to the improvement, culture, quality, and adaptation of winter wheat are presented. The data pertain to such considerations as type and varietal comparisons as to yield, quality, and milling and baking values; selection of pure lines; technique of testing; growing strains pure versus in mixture; effects of time, rate, and manner of seeding; relation of seed grades to production; spring cultivation; pasturing and clipping; progressive kernel development; premature harvesting; winterkilling; rust resistance; effect of smut and smut treatment; and histological adaptation.—*T. A. Kieselbach.*

5919. KIESSELBACH, T. A., AND ARTHUR ANDERSON. Hardy alfalfa for Nebraska. Nebraska Agric. Exp. Sta. Circ. 32. 1-8. *Illus.* 1925.—In field tests comparing 8 commercial varieties and 18 regional strains of common alfalfa, the serious susceptibility to winterkilling under Nebraska conditions has been established for Argentine, Spanish, and Italian strains of common alfalfa and for the Hairy Peruvian variety. There has been no marked difference in productiveness between the American-grown common alfalfa and the 4 variegated varieties: Grimm, Cossack, Baltic, and Canadian Variegated.—*T. A. Kieselbach.*

5920. KILLER, J. Beiträge zur Züchtung der in der Ebstorfer Gegend angebauten Up to date-Kartoffel. [A contribution to the culture of the potato variety "Up to date" grown in the Ebstorf region.] *Illus. Landw. Zeitg.* 42: 286-288. 1922.—A discussion of the variety, together with its desirable and undesirable strains, and the possibility of securing by selection strains superior in every way, including increased resistance to late blight (*Phytophthora infestans*).—*John W. Roberts.*

5921. KIMBROUGH, WILLIAM DUKE. A study of respiration in potatoes with special reference to storage and transportation. Maryland Agric. Exp. Sta. Bull. 276. 51-72. 6 fig. 1925.

5922. KIRK, L. E. Self-pollination of sweet clover. *Sci. Agric.* 6: 109-112. 3 fig. 1925.—*Melilotus alba* is highly self-fertile and will set seed freely in the absence of insects. In the case of *M. officinalis* it appears that either the seed will not set freely without cross-pollination by insects, or that the plants may be so sensitive to the artificial conditions incident to caging that seed setting is prevented.—*T. G. Major.*

5923. KIRK, L. E., AND C. H. GOULDEN. Some statistical observations on a yield test of potato varieties. *Sci. Agric.* 6: 89-97. 1925.—In a test of 20 potato varieties, each in 15 systematically distributed rod rows, it was indicated that at least 7 rod row plots were necessary to secure reliable results. The probable error determined by the check plot and deviation of the mean methods was practically the same in both cases, the latter method evidently being of special value when the number of checks is small. The relation of the correlation between plot yields and probable error of a difference was found to be of importance.—*T. G. Major.*

5924. KNIBBS, G. H., AND SEYMOUR HOWE. Power alcohol from sugar cane. Australian Sugar Jour. 17: 446-447. 1925.—This is an epistolary discussion of some of the pros and cons of the proposition to establish a power-alcohol industry in Australia.—*Nellie E. Fealy.*

5925. KONDO, MANTARO. Untersuchung der Temperatur des Reissaatbeetes (Nawasiro). [Studies on the temperature of rice seed beds.] *Jour. Sci. Agric. Soc.* 223: 238-276. 1921.—The temperature of the rice seed bed is very important as it has a great effect upon the germination and growth of the seedlings. At least 6 cm. of water over the surface of the soil is necessary to keep the bed warm during cold weather. The seed beds are frequently seen, however, with little or no water on the surface and during cold weather the seed in such beds will germinate poorly and grow slowly. In warm weather the amount of water should be greatly reduced since under such conditions the rice grows better in a seed bed which is only saturated than in one deeply covered with water. In southern Japan the seed beds are often kept in a saturated condition without free water on the surface and are covered with compost, rice hulls or sand. The temperature of the lower layers of earth is almost independent of

the temperature of the surface layer. The germination and growth of the seedlings are influenced most by the surface layer of the soil. The air and seed bed temperatures may vary greatly from each other as may also the temperatures of the water and of the seed bed.—*A. F. Camp.*

5926. KONDO, MANTARO. Untersuchungen über die Keimung der Reiskörner und das Wachstum der Keimpflanzen auf dem Reissaatbette (Newasiro). (Japanese.) [Experiments on the germination of rice seed and the growth of the seedlings in rice seed beds.] Jour. Sci. Agric. Soc. [Japan] 240: 791-862. 1922.—The author found that the covering of the rice beds with at least 3 cm. of water favored the growth of the seedling plumule and was better than just covering the beds or merely keeping them saturated, while the favorable conditions for the growth of the radical were just the reverse. If the weather is warm the beds should be just covered with water and if cold they should be flooded at least 3 cm. deep. The practice of covering the seed beds with river sand, compost or rice hulls was found to be injurious to germination and growth. Where the water is kept deep on the seed beds the plants often grow up and protrude out of the water. It was found that this only occurred when the beds were very warm and not when they were cold. The practice of draining the beds during the day to prevent this was found injurious but it was found that it could be controlled under such warm conditions by using only a slight covering of water or by keeping the ground merely saturated. In the neighborhood of the coast where the soil contains considerable salt it was found that if the soil contained very little salt it was profitable to merely saturate the soil and cover with charred rice hulls; but where the salt content was high the bed should be well flooded and the water drained frequently and replaced with fresh water.—*Adapted by A. F. Camp from author's abstract in Japanese Jour. Bot.*

5927. KRAUS, E. J. The desirability of a knowledge of the storage and utilization of organic reserves in crop production. Jour. Amer. Soc. Agron. 17: 675. 1925.—F. M. Schertz.

5928. KRAUSS, F. G. Seventh Annual Report of the Agricultural Department. Univ. Hawaii Quart. Bull. 4: 30-38. 1925.—The results of fertilizer experiments with sugar cane are given. Cultural experiments with pigeon peas (*Cajanus indicus*), Uba or Japanese cane, Merker grass (*Pennisetum merkeri*), and Elephant or Napier grass (*P. purpureum*), Indian corn intercropped with soy beans, and tomatoes, are reported.—*H. F. Bergman.*

5929. [КРОТКИНА, М. А.] Кроткина, М. А. Наблюдения над ростом сахарной свеклы близ Ленинграда. [Experiments with the growth of sugar beets near Leningrad.] Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 220-234. 1924.—Transplanted sugar beets had higher yield, higher dry weight and higher percentage of sugar than sown sugar beets. Different measurements are given for the size of roots, and for the size and number of stomata.—*M. Demerec.*

5930. [KULKARNI] KULRANI, L. B. Germination test of the grass seeds. Poona Agric. Coll. Mag. 17: 75-81. 1925.—Reports a brief study of the germination requirements of *Andropogon purpureosericeus*, *A. annulatus* and *A. contortus*. The seed of *A. purpureosericeus* germinated readily under a wide range of temperature conditions. The seed of *A. annulatus* and of *A. contortus* did not germinate well at various, constant or alternating temperatures, with exposure to light or with treatment with a dilute KNO_3 solution. The embryos of the ungerminated seed of *A. contortus* were shown to be viable at the end of the test.—*E. H. Toole.*

5931. [KUZNETSOV, V. A.] В. А. Кузнецов. Краткий отчет о научной поездке в Архангельскую губ. в 1922 г. [A short account of the expedition of 1922 to Archangelsk Province.] Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. and Plantbreed.] 13: 107-116. 1922-1923 (1923).—The expedition to Northern Russia brought back wild-growing red clover and a rich assortment of cereals.—*M. Demerec.*

5932. LANDER, P. E., and PANDIT LAL. CHAND DHARMANI. A new fodder (silod shisham leaves) for dairy cows. Agric. Res. Inst. [Pusa] Bull. 158. 1-11. 1925.—An account is given of feeding trials in which silage made from shisham (*Dalbergia sissoo*) leaves was fed to dairy cows. Some little time was required for the animals to become accustomed to the taste of the silage. No deleterious effect whatever was noted in the quality of the milk of the animals fed on the silage, the yield was fairly maintained and the animals remained in good health throughout the trial which lasted a little less than 2 months.—*H. L. Westover.*

5933. LANDSBERG, GER. *Preussische landwirtschaftliche versuchs- und Forschungsanstalten*. [Prussian agricultural experiment and research institutions.] Jahresber. Preussischen Landw. Versuchs- und Forschungsanstalten in Landsberg a. W. Berlin 59^a: 355-416. 1923.

5934. LEBAIL, ALBERT. *L'agriculture dans un département français, le Finistère agricole*. [Agriculture in a department of France.] Société française d'imprimerie d'Angers: Angers, 1925.

5935. LÉVÊQUE, P. F., AND G. PERRAULT. *Le livre du cultivateur; ce que tout agriculteur doit savoir*. [The farmers book; what every agriculturist should know.] 357 p. E. Flammarion: Paris, [1925].

5936. LOWE, G. N. *The potato. Digging the crop and preparing it for sale*. Jour. Dept. Agric. Western Australia 2nd ser. 2: 501-502. 1925.—Attention is called to the loss suffered when potatoes which are to be shipped a considerable distance are dug before maturity. Machine digging is recommended where the land is free from stumps and roots and is otherwise favorable. Proper grading for market is urged as an important final step.—P. J. Olson.

5937. LUTE, ANNA M. *Some notes on the behavior of broken seeds of cereals and sorghums*. Proc. Assoc. Official Seed Analysts North America 1925: 33-35. 1925.—From a study of the matter of the disposition of broken seed when making seed purity analyses the author concludes from experiments made upon selected types of broken seed of barley, wheat, rye, and sorghums, that all breaks in seed coats of the 4 kinds studied injure germination. Injury to the embryo end is more serious than injury to other parts of the seed, the injurious effect varying with amount of injury. The crosswise break in barley seed is less injurious than in wheat or rye. Freshly cracked sorghum seed behaved more nearly like sound seed than did cracked seed selected from a bulk where the injury had been of greater or less duration. Cracked seed planted in the greenhouse showed a lower germination as compared with sound seed than they did in the germinators. All broken seed in the germinator showed more mold than did whole seed from the same sample. Sorghum seed, surface sterilized and then placed on nutrient agar, showed a greater percentage of fungous infection for broken seed than for whole seed, seed designated as "split" showing the highest percentage of infection.—M. T. Munn.

5938. MCCOOL, M. M., G. M. GRANTHAM, AND C. W. SIMPSON. *Top dressing wheat*. Michigan Agric. Exp. Sta. Quart. Bull. 3: 59-60. 1920.—Nitrate of soda and sulphate of ammonia, in amounts supplying equal quantities of N, were used on wheat on light and on heavy soils. The applications were profitable on most light soils but not on heavy ones. On acid soils the nitrate was superior to the sulphate. Detailed record of yields is given.—A. J. Pieters.

5939. McDONALD, JAMES. *Lawns, links and sportsfields*. With a foreword by R. V. GIFFARD WOOLLEY. ix + 77 p. "Country Life," Ltd. London; C. Scribner's Sons: New York, 1923.

5940. MCINTOSH, T. P. *A historical note on some potato varieties and breeders*. Gard. Chron. [London] III. 78: 374, 393, 413-414. 1 fig. 1925.—Notes on origin of some potato varieties.—P. L. Ricker.

5941. MCLEAN, F. T. *Notes on agriculture in southern China*. Philippine Agric. 8: 205-211. 1920.

5942. MCRAE, J. D. *Willaura crop and fallow competitions, 1924*. Jour. Dept. Agric. Victoria 23: 343-346. 1925.—Details regarding awards in a wheat growing competition.—A. J. Pieters.

5943. MAGISTAD, O. C., AND E. TRUOG. *The influence of fertilizers in protecting corn against freezing*. Jour. Amer. Soc. Agron. 17: 517-526. 1925.—Application of fertilizers in the hill increases the osmotic pressure of the sap of young corn plants which in turn lowers the freezing temperature of the plant 1-2°C. Plants grown on soils of low soluble salt content such as peats, mucks and poor sands will undoubtedly benefit most from such use of fertilizers.—F. M. Schertz.

5944. MALORSKI, HENRYK, I JOZEF SYPNIEWSKI. *Wplyw wilgotnosci gleby i naswietlenia na rozwoj lubinu (Lupinus angustifolius L.) i na zawartosc alkaloidow w jego nasieniu*. [The

influence of soil moisture and insolation on the development of *Lupinus angustifolius* and in the alkaloidal content of its seeds.] (French résumé.) Mem. Inst. Nation. Polonais Econ. Rurale à Putawy 4: 302-327. 1923.

5945. [MAL'TSEV, A. I.] Мальцев, А. И. Об использовании сорных и других дикорастущих растений в домашнем быту. [The use of weed and other wild plants.] Труды. Прикл. Бот. Селекции. [Bull. Appl. Bot. and Plantbreed.] 13: 85-89. 1922-1923 (1923).—The author lists plants used as substitutes for several necessities hard to obtain due to war conditions. Plants are mentioned which were used to obtain dyes, to manufacture leather, as substitutes for tea, cereals, etc.—*M. Demerec*.

5946. MAMELI-CALVINO, E., e F. MASTIO. Azione degli anestetici sulla germinazione delle gemme della canna da zucchero. [Action of anaesthetics on the growth of buds of sugar cane.] Agric. Coloniale 191: 1-15. 1925.—Submitting cuttings of sugar cane to ether vapors for 24 hours hastened time of germination 8.8-53.8%. When 84 cc. of ether per 100 liters of air for 18 hours were used, there was an increase in germination of 45% over the controls. Chloroform vapors were ineffective. Aqueous solutions of denatured ethyl alcohol were effective only when very dilute. A solution of 2.5% for 2 and 4 hours hastened germination by 18.6 and 13.2%, respectively. Treatments with acetylene gas were slightly more advantageous as regards time of germination and decidedly so as regards percentage of germination, giving in increase of 75% over the controls when the cuttings were submitted to 33% acetylene gas for 2 hours.—*Authors (transl. by P. D. Coldis)*.

5947. MATIGNON, C. Sur les engrais azotés. [Nitrogenous fertilizers.] Prog. Agric. et Vitic. 79: 137-140, 155-160, 208-213. 1923.

5948. MAUME, L. Le chlorhydrate d'ammoniaque et les engrais azotés. [Ammonium chloride and nitrogen fertilizers.] Prog. Agric. et Vitic. 77: 588-592. 1922.—Ammonium chloride was found to give about the same results as other commonly used nitrogenous fertilizers when used on plots of wheat.—*E. L. Proebsting*.

5949. MAUPAS, A. Sur la germination des semences de folle avoine. [Germination of wild oat seed.] Prog. Agric. et Vitic. 83: 254-259. 1925.

5950. MEGEE, C. R. Hardy alfalfa and clover seed. Michigan Agric. Exp. Sta. Quart. Bull. 5: 16. 1 fig. 1922.—Italian red clover winter-killed over 50% in the rather mild winter of 1921 and 1922. Arizona and Peruvian alfalfa also winter-killed badly, giving a much poorer yield than that from northern grown seed.—*Ernst A. Bessey*.

5951. MEGEE, C. R. Sweet clover. Michigan Agric. Exp. Sta. Spec. Bull. 113. 1-14. 6 fig. 1922.—A discussion of sweet clover (*Melilotus alba*) as soil builder, pasture crop, hay crop, honey crop, of fertilizers, seeding, cultural practices, curing of hay and harvesting of seed.—*Ernst A. Bessey*.

5952. МЕХТА, НАНЖИ К. Sugar conditions in Uganda. Studying conditions in Mauritius. Peeps at Madagascar. South African Sugar Jour. 9: 675, 677, 679. 1925.—Historical, physical, and economic data regarding Madagascar and Mauritius, comparative data regarding sugar production in Mauritius and Uganda, and data regarding introduction and extent of sugar culture in Mauritius are given. "The climate and soil of Uganda are far more suitable for cane growing than in Mauritius." In the former the yield of cane is 80 tons per acre and it takes about 16 tons of cane to make a ton of sugar, while in Mauritius the yield is about 30-40 tons per acre and 9 tons of cane are required to make 1 ton of sugar.—*Nellie E. Fealy*.

5953. MENCHIKOWSKY, F. "Arab manure." (Hebrew with English summary.) Zionist Organization Inst. Agric. and Nat. Hist. Agric. Exp. Sta. Extension Circ. 5. 1-22. 6 fig. 1925.

5954. MICHAEL, L. G. Agricultural survey of Europe: the Danube Basin—Part I. U. S. Dept. Agric. Dept. Bull. 1234. 1-111. 12 fig. 1924.—This is the first of a series of reports on the agriculture of those regions of the world that compete with the products of American agriculture in foreign markets and of those countries that offer a market for our surplus. This deals with the upper Danube basin, Czechoslovakia, Austria, Hungary and Jugoslavia. The pre-war status of production, consumption, import and export in each country is compared with that of 1920 to 1922.—*Author*.

5955. MIÈGE, E. Les orges Marocaines. [The barleys of Morocco.] Gouv. Chérifien,

Direct. Gen. Agric. Commerce et Colonisation 2. 1-184. 48 fig. R. Berthoumieux: Rabat, 1924.

5956. MIÈGE, EM. Sur la présence au Maroc de *Triticum dicoccum* Sch. Bull. Soc. Sci. Nat. Maroc. 5³: 98-109. 4 pl. 1925.

5957. MIR, E. Sélection et hybridation des céréales. Prog. Agric. et Vitic. 78: 303-306. 1922.

5958. MITTERHAUSER, M. Kunstdüngung- und Sortenanbauversuche in Weigelsdorf. [Fertilizer and variety tests in Weigelsdorf.] Wien. Landw. Zeitg. 75: 464-465. 1925.

5959. MIYAZAWA, BUNGO. Dwarf forms in barley. Jour. Genetics 11: 205-208. 1 pl. 1921.

5960. MONTGOMERY, EDWARD GERRARD. Productive farm crops. 519 p. J. B. Lippincott Co.: Philadelphia and London, 1922.

5961. MOORE, H. C. Quality seed for economical potato production. Michigan Agric. Exp. Sta. Quart. Bull. 5: 123-126. 1 fig. 1923.—A discussion of certified seed potatoes and their performance when planted in other states.—*Ernst A. Bessey*.

5962. MUKERJI, J. N. The quality and yield of tobacco as influenced by manurial and other operations. Mem. Dept. Agric. India, Chem. Ser. 8. 1-26. 1925.—In Bihar, the most extensive and best quality production of tobacco are found in the Tajpur Subdivision, and Pusa, where these experiments were conducted, is located in this subdivision. Pot culture tests for 1 year and field plot experiments for 2 years were conducted with Pusa soil to study the effects of farmyard manure, indigo seeth and mineral fertilizers on tobacco. As to yield, best results were obtained with a complete mineral fertilizer. A larger proportion of phosphorous than that in farmyard manure is advantageous. Farmyard manure and indigo seeth occupy a leading position as fertilizer for tobacco because of their cheapness, their availability in Bihar, and their great effectiveness. No definite relation was found between the fertilizer treatment and the quality of the tobacco and ash; amido N and albuminoid N content of the leaf were hardly affected. Organic manures gave a low content of potash in the leaf while mineral fertilizers gave a high content of potash. Muriate of potash as a fertilizer markedly increased the chlorine content of the tobacco. Saltpeter as a fertilizer caused the tobacco to burn quickly when smoked. The nicotine content was generally proportional to the yield of tobacco. As compared with spiking, topping gave the same yield of leaf, materially increased the yield of stalk, improved the quality of leaf, produced a higher nicotine content and improved the burning qualities. There was no material difference as to content of ash, potash, chlorine and protein. As compared with ground-curing, rack-curing produces a lighter colored leaf, suitable for cigarettes, which is more elastic, and contains more starch and less nicotine, especially the volatile form of nicotine. Rack-curing entails considerable expense and supervision.—*W. W. Garner*.

5963. MUNN, M. T., AND ELIZABETH F. HOPKINS. The quality of packet vegetable seed on sale in New York. New York [Geneva] Agric. Exp. Sta. Bull. 507. 1-23. 1924.—A report of the net weight, selling price, and viability of 347 packets of vegetable seed purchased on the market in the State of New York in 1923 by agents of the Department of Farms and Markets and submitted to the New York Agricultural Experiment Station to be tested under the provisions of the New York seed law. Packets offered for sale at the same price varied greatly in net weight of contents. The seed in 23% of the packets were absolutely worthless for planting.—*F. C. Stewart*.

5964. MUNN, M. T., AND ELIZABETH F. HOPKINS. Work of the seed testing laboratory from 1918 to 1923, with notes on seed quality, seed testing, seed law compliance, and trade practices. New York [Geneva] Agric. Exp. Sta. Bull. 504. 1-35. 1923.—The relation of seed testing and the New York seed law to agricultural practice and to the seed trade is discussed from various angles, use being made of the data obtained from purity and viability tests of about 7000 samples of agricultural seed. The list of topics includes: Methods of seed testing, winter-killing of red clover from Italian-grown seed, objectionable features of seed mixtures, natural mixtures, bargain mixtures, lawn grass seed mixtures, results of official seed inspection, and "estimate" analyses.—*F. C. Stewart*.

5965. MURRAY, J. C. Report of Southern Field Assistant. Australian Sugar Jour. 17:

505, 511-512. 1925.—Observations on agronomic practices and the value of different cane varieties in the Isis district.—*Nellie E. Fealy*.

5966. MURRAY, J. C. Southern Field Assistant, Bureau Sugar Experiment Stations. Australian Sugar Jour. 17: 464-465. 1925.—E.K.28 (Java) is a good stooling, free-trashing cane, of fairly high sugar content, and is improving with acclimatization. H.Q. 285 has given very satisfactory returns, and E.K. 28 and Q. 813 are doing well. Black Innis is not disease resistant. In the Mullet Creek area gumming is widely distributed on D. 1135.—*Nellie E. Fealy*.

5967. MUSGRAVE, GEORGE W. Correlation of yield of straw and grain in oats in New Jersey. Jour. Amer. Soc. Agron. 17: 769-775. 1925.—In 1923, 1924 and 1925 large grain yields were shown to be correlated with low straw yields. No significant correlation was noted between grain and straw production in barley.—*F. M. Schertz*.

5968. MUSGRAVE, GEORGE W. Report of the Department of Agronomy. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 197-232. 1924 [1925].—Results of size of potato seed piece studies showed that increasing the amount of seed gave increased yield returns as well as an increase in the number of stems per hill. Data are presented to show that there is a depression of the yield of the check rows by the high-yielding plot rows.—In an alfalfa strain test little yield differences were observed, excepting as between Arizona seed and the various sources from Kansas and northward. The plots from the Arizona seed winter-killed badly. In a wheat variety test Dawson's Golden Chaff and Leap's Prolific gave highest; Gladden and Kanred, lowest yields. In an oat and barley variety test the early varieties of oats, Kherson and Iowar, gave largest test weights per bushel and the Kherson the largest yield of grain per acre. In a timothy variety test, yields of the selected varieties in general were better than a selected commercial strain. In the northern part of the state Burr Leaming corn gave best yields but in the south, White Cap Yellow Dent yielded best. In a comparison of smooth and rough types of Yellow Dent corn the smooth gave larger percentages of smooth ears and of an apparently disease-free crop. The yields from the 2 selections were approximately the same.—The results of a survey covering costs and practices in the growing of soy beans are presented as well as results of preliminary work to determine the amount, proportion and rate of growth of top and roots in rye and vetch.—*Wm. H. Martin*.

5969. MUSGRAVE, GEORGE W., AND ALLEN G. WALLER. Alfalfa yields, cultural practices and production costs as influenced by the soil formation in New Jersey. New Jersey Agric. Exp. Sta. Bull. 408. 1-31. 10 fig. 1925.—Survey records were classified according to soil formation into the following groups: (1) Soils of limestone origin, residual and glacial; (2) soils of the Appalachian mountains and plateaus, residual and glacial, exclusive of poorly drained types; (3) soils of the Piedmont Plain; (4) soils of the Coastal Plain. The yields for these 4 groups were 3.65, 3.26, 2.51 and 2.88 tons per acre. In groups 1, 2 and 3 "Northwestern" seed gave superior yields to "Kansas" seed while in group 4 the reverse was true. The rate of seeding, use of lime and manure and drainage are discussed for the different soil groups.—*Wm. H. Martin*.

5970. NEMEC, ANTONIN. Experiences sur l'inoculation de la betterave. [Experiments on inoculation of sugar beets.] Ann. Sci. Agron. Francaise et Etrangere 41: 254-259. 1924.—On the basis of Blunck's (Centrbl. Bakt. 51: 87. 1920.) method of preparing bacterial culture, originating from leguminous plants and gradually adapted to non-leguminous plants, the author has carried on field experiments with respect to sugar beets. He found that inoculation of sugar beet seed gave an increase in yield of 5.6-17%. In all cases the quality of sugar beets was bettered.—*T. Robert Swanback, A. B. Beaumont*.

5971. NEWTON, R., AND J. G. MALLOCH. Wheat quality and environment. Sci. Agric. 6: 14-26. 1925.—The chemical composition and physical and biochemical properties of wheat and flour have been extensively investigated in their relation to milling and baking quality. The plumpness of the kernels is probably the most important factor governing flour yield. This may be determined by weight per measured bushel, kernel volume and specific gravity, ash content and shape of kernel. Color is also an important consideration. The factors contributing to baking quality are extremely complicated. The rôles of proteins, carbohydrates, fat, ash and enzymes have been studied and certain tests devised which serve as

valuable checks on the baking test method of evaluating flour. A graphical table is given showing the factors in flour strength.—*T. G. Major*.

5972. NIESER. Zuckerrübenbau. [Growing sugar beets.] Zuckerrübenbau 7: 166-168. 1925.—The aims in breeding beets must be to increase the percentage of sugar, to produce a shape which is easily pulled, to make the time of ripening more convenient, to prevent shooting, and to harmonize and render all characteristics hereditary. Germination tests and the effects of soil and manure are discussed.—*B. Nebel (transl.)*.

5973. ØDELIEN, M. Nogle naerliggende sporsmaal vedrorende beiterfor sokene. [Some pertinent questions concerning sugar beet tests.] Nordisk Jorbrugsforskning 1923: 408-414. 1923.

5974. OSBORN, E. H. Report of northern field assistant. Bureau of Sugar Experiment Stations. Australian Sugar Jour. 17: 463-464. 1925.—Mention is made of the production of 45 tons per acre from a 15-months' crop of plant Badila cane from a 40-acre field which had been green manured, while only 18 tons per acre were cut from a nearby fumigated block of second ratoons, and the unfumigated check plots in the same paddock were not worth cutting. In another case 43 tons per acre were cut from a 10½ months' crop of H. 109 which had received about 3 cwt. of mixed manure. B. 147 generally gives a fair crop, both for weight and density, on medium land. Green Goru is so liable to leaf scald that it is not recommended.—*Nellie E. Fealy*.

5975. PANTANELLI, E. Relazione su l'attività della Stazione Agraria Sperimentale, Bari, nel biennio 1922-23. [Activities of the Agricultural Station of Bari, 1922-1923.] 148 p. 16 pl. Bari [Trizio], 1924.—A report of the work of the Agric. Exp. Station of Bari, Italy, on dry-farming.—*R. Ciferri (translated)*.

5976. PARODI, LORENZO R. Estudio preliminar sobre las especies de "Avena" cultivadas en la Argentina. [Preliminary study of the species of Avena cultivated in Argentina.] Physis 8: 252-256. 1 fig. 1925.

5977. PAVLOV, D. P. Agricultural re-organization in Russia. Grain and special cultures. Sci. Agric. 5: 169-178. 1925.—After briefly discussing the climatic and general agricultural conditions in Russia, the writer outlines the governmental policy regarding grain farming. This policy includes the adoption of the multiple crop rotation, encouragement of seed growing, development of experiment stations, introduction of farm machinery, organization of co-operative societies and agricultural credits. In addition, special attention is being paid to the growing of potatoes, sugar-beets, flax, hemp, sunflower, tobacco and cotton.—*T. G. Major*.

5978. PEITERSEN, A. K. Co-operative work between state seed laboratories and the seed trade. Proc. Assoc. Official Seed Analysts North America 1921: 30-31. 1923.

5979. PELIZAEUS, G. Über den Baumwollenanbau in Sudspanien. [Cotton growing in southern Spain.] Tropenpflanzer 28: 135-136. 1925.

5980. PETREE, ERNEST. Dasheen is gaining favor as important Florida crop. Florida Grower 32²¹: 6. 1925.

5981. PETTINGER, N. A. The relation of coleoptile length to yield in oats. Jour. Amer. Soc. Agron. 17: 537-544. 1925.—The author used 206 individual plant selections of the Early Champion variety of oats. The correlation coefficients obtained were mathematically but not biologically significant. Therefore, coleoptile length is not a reliable index of yield.—*F. M. Schertz*.

5982. POWERS, W. L. Water requirements of plants as an indication of net duty of water in irrigation. Jour. Amer. Soc. Agron. 17: 643. 1925.—The crop-producing power of water is shown for various crops.—*F. M. Schertz*.

5983. PRESCOTT, J. A. Some observations on the growth of maize in Egypt. Sultanic Agric. Soc. Bull. 7. 1-25. 1921.—There are 2 maxima of growth each day, one just before and after sunset, and the other after sunrise. Growth during mid-day is frequently checked because of lack of water. In such cases the average night growth may be greater than the day growth. Silking takes place 1-2 days after growth in height has ceased. Charts are given plotting the growth against the daily temperature. Keeping the water content of the soil up to or above 25% of the dry weight of the soil resulted in higher yield than where the usual irrigation practice was followed. Date-of-planting experiments show that July plant-

ings give the best yield. The height of the plants 20 days after planting was greatest also in the case of July plantings.—*W. Carlton McQuiston.*

5984. PRINSEN-GEERLINGS. Zuckerrohr. [Sugar cane.] *Monographien zur Landwirtschaft warmer Länder.* [Monographs on agriculture of warm countries.] Vol. 2. 123 p. Walter Bungert: Hamburg, 1925.—Details are given of the botanical and chemical characteristics of the cane. The nomenclature is often very confusing, for example, Cheribon cane from Java is identical with Louisiana Purple of the U. S. A., and Morada of Argentina. The Ragoda cane from Cuba and Argentina, Striped Singapore from Australia, Louisiana Striped of the U. S. A., Goyana Rosa from Brazil and Gingham from Mauritius are all the same variety. At first valuable seedlings were given a name, but at present they have usually a number with the name of the experiment station or country of origin. A first attempt at hybridization started in 1887 and now many old varieties have been replaced by improved seedlings. Details are given as to sugar breeding, and chapters are devoted to soil, manuring, artificial irrigation and drainage, soil management in various countries, pests and diseases, and also the various products derived from the sugar factories. Bud varieties have not received much attention.—*J. C. Th. Uphof.*

5985. PROSKOWETZ, E. Die Entwicklung der Kultur und der Züchtung der Zuckerrübe. [Development of culture and breeding of the sugar beet.] *Wien. Landw. Zeitg.* 75: 410-412. 1925.

5986. PUTNAM, G. W. Sunflower experiments. *Michigan Agric. Exp. Sta. Quart. Bull.* 3: 49-52. 2 fig. 1920.—The so-called "Russian" sunflower has proved well adapted as a silage crop in the Upper Peninsula of Michigan. Experiments showed that planting the last week of May gives better crops than plantings in June. The best distances for the rows are 24-36 inches. The best rate for drilling the seed is 6-8 pounds per acre.—*Ernst A. Bessey.*

5987. QUISUMBING, EDUARDO. *Marsilea crenata* Presl., a noxious weed: its eradication and control in rice fields. *Philippine Agric.* 13: 209-212. 2 pl. 1924.

5988. RABATÉ, E. Action de l'acide sulfurique dilué dans les champs de cereales. [Action of dilute sulphuric acid on grain fields.] *Prog. Agric. et Vitic.* 82: 614-616. 1924.—Dilute sulphuric acid is held to act as a fertilizer, to destroy weeds and to reduce the amount of infection by *Leptosphaeria herpotrichoides* and *Ophiobolus graminis*.—*E. L. Proebsting.*

5989. RABATÉ, E. L'intensification de la production du blé. [Increasing the production of wheat.] *Prog. Agric. et Vitic.* 78: 469-478. 1922.

5990. REW, ROBERT HENRY, AND E. J. RUSSELL. The possibilities of British agriculture. With foreword by LORD BLEDISLOE. 32 p. J. Murray: London, 1923.

5991. RIEFER, P. F oder E. [F or E.] Zuckerrübenbau 7: 122-123. 1925.—The Stöbnitz sugar factory has reached the conclusion that it is most profitable to work sugar beets of the E type, giving more sugar to the acre. The sugar content of the E type beets is only 0.1 to 0.2% less than that of the F type. In a rough contest at Stöbnitz the yields from the E type exceeded those from the F type by 10-15%.—*B. Nebel (transl.).*

5992. ROEMER, TH. Zur Phosphorsäuerdüngung der Rübe. [Fertilizing beets with phosphoric acid.] *Zuckerrübenbau* 7: 13-15. 1925.—The results from Neubauer's analyses of various soils are compared with field experiments obtained from the same fields carried out by the leaders of the experiment groups in 1923 and 1924. Only the experiments and analyses for sugar-beet fields are presented. Soils showing more than 8 mgm. P_2O_5 in 100 gm. do not respond to the application of phosphoric acid. Soils with less than 4 mgm. P_2O_5 in 100 gm. need more than 50 kg. superphosphate or Thomas slag—probably about 100 kg. per hectare—to produce full crops with good sugar content. Only 12% of the soil analyzed showed above 8 mgm. P_2O_5 .—*B. Nebel (transl.).*

5993. ROLLAND, L. Expérience comparative d'engrais azotés sur blé. [Comparative trials of nitrogenous fertilizers on wheat.] *Prog. Agric. et Vitic.* 82: 539-541. 1924.—On the basis of 1 year's trial of ammonium sulphate, ammonium chloride and urea on 2 series of plots of wheat, the author concludes that the first is the better for grain production, the last for straw.—*E. L. Proebsting.*

5994. ROLLAND, L. Résultats des champs d'expériences de variétés de blés. [Results of field trials of wheat varieties.] *Prog. Agric. et Vitic.* 84: 282-287. 1925.

5995. ROSETTI-BĂLĂNESCU, N. Tratamentul semințelor cu sulfatul de cupru. [Seed treatment with copper sulphate.] *Viața Agricolă* 16: 398-401. 1925.—The author confirms the results of Hittier by his seed treatment tests with winter wheat that with sound seed the germinability is not lowered by copper sulphate. He gives the best concentration and duration of treatment to be used.—*Emil Pop (transl.)*.

5996. RUBNER, MAX. Unsere Brotgetreide in physiologischer und volkswirtschaftlicher Hinsicht. [Our bread cereals from the physiological and economic standpoint.] *Naturwissenschaften* 13: 645-651. 1925.

5997. RUSSELL, E. JOHN. Report on the experiment on the influence of soil, season and manuring on the quality and growth of barley. *Jour. Inst. Brewing* 29: 624-645. 1922.—A report is made of the first results on the effect of soil, season and manure secured from a series of 5 plots receiving (1) no manure, (2) complete artificials, (3) complete artificials without K, (4) complete artificials without P, and (5) complete artificials without N, located at 13 centers. As a result of the unfavorable season, the yield was little affected but quality was very much depressed. Complete fertilizer increased yields on the average of 15%, N alone about 5 bushels, phosphates showed little effect, while potash increased the yield in several cases.—Soil and season influenced quality more than manures. Nitrogen tended to lower quality, P raised quality and K showed indifferent effect; N content of grain was influenced largely by soil and season and only slightly by fertilizer treatments.—A 2nd report (*Jour. Institute Brewing* 30: 818-837) showed similar results to the 1st. The most effective fertilizer constituent was again, N, with P effective in about $\frac{1}{2}$ of the trials and K effective only on the light soils.—*R. G. Wiggins*.

5998. SALAMAN, R. The influence of size and character of seed on the yield of potatoes. *Jour. Ministry Agric.* 28: 1-6. 2 pl. 1921.

5999. SAMSON-HIMMELSTJERNA, K VON. Über die landwirtschaftliche Verhältnisse des persischen Provinzen Astarabad und Masanderan. [Agricultural conditions in the Persian provinces of Astarabad and Masanderan.] *Tropenpflanzer* 27: 55-63. 1924.—A description is given of the climatic conditions of the 2 Persian provinces. In winter, wheat and barley are grown, seed being planted from the end of November until the beginning of December. Harvest takes place the end of May or the beginning of June. The potato is an important winter crop, though it is not much in demand. Among the summer crops of importance are rice, sesam, cotton and sugar cane. Rice needs regular irrigation and is planted in April and May and harvested in August and September. Sesam is often grown after rice as it prefers much moisture. Cotton is grown in Masanderan, but its quality and quantity is behind that of the American and Egyptian varieties. Sugar cane is propagated from seed and from cuttings in April and May and is harvested in July and August. Tobacco is but little grown. Among the horticultural plants are found oranges, grapefruit, mandarines and lemons. Among the vegetables grown are spinach, onions, garlic, turnips, lettuce, parsley, dill and mint.—*J. C. Th. Uphof*.

6000. SAPEGIN, A. A. Statistics: an elementary textbook for agronomists. 79 p. 1922.

6001. SCHNEIDEWIND, W. Statische Düngungsversuche der Versuchswirtschaft Landestadt mit Zuckerrüben. [Manuring experiments with sugar beets.] *Zuckerrübenbau* 7: 177-184. 1925.—Data covering the period 1903-1921 show that beets which received manure and fertilizers yielded the same amount of dry matter. If no manure was applied the dry matter was slightly reduced in spite of the N-P-K fertilizers. If no P was given the yields dropped rapidly. Manure, N, and P also were unable to produce the full yield. The sugar percentage fell likewise. The sugar beet makes the best use of P of all the plants used in the experiment (potatoes, wheat, and barley). The P of the manure was assimilated better than that of the fertilizers. Nearly sufficient K is furnished when ample manure is used. Potash was assimilated best by potatoes. The potash in the manure was more effective than that in the fertilizers. Nitrogen was utilized by the beets to the fullest extent. Nitrogen from fertilizers given as NH_4 as well as that given as nitrates, was taken up better than the N from manure.—*B. Nebel (transl.)*.

6002. SCHULZE. Grundlage der Konservierung von Frischfutter. [Fundamental principles in the preservation of fresh fodder.] *Illus. Landw. Zeitg.* 43: 355-356. 1923.—A popular

discussion of the subject with particular reference to bacterial activities and conditions affecting them.

6003. **SESSONS.** *Ergebnisse zweijähriger Rübenstandweitenversuche in der Saatzuchtwirtschaft Fr. Strube Schlanstedt.* [Results of two-years' spacing experiments in growing beets at Fr. Strube's seed farm in Schlanstedt.] *Zuckerrübenbau* 7: 8-12, 21-23. 1 fig. 1925.—The highest yields were obtained when the beets were drilled 37.5, 40, and 45 cm. apart and thinned to 30 cm. The largest sugar yield to the $\frac{1}{4}$ ha. was obtained from the same spacing.—*B. Nebel (transl.)*.

6004. **SEWELL, M. C., AND L. E. CALL.** *Tillage investigations relating to wheat production.* *Kansas Agric. Exp. Sta. Tech. Bull.* 18. 1-55. 1925.—The time of tillage is the most important factor in the preparation of land for wheat. An average yield difference between July and September plowing of approximately 11 bushels per acre was recorded. Depth of plowing has not varied the yield in 2 out of 3 different tillage experiments. Deep plowing once in 3 years may be sufficient to maintain maximum yields. Early summer tillage increases the amount of soil moisture and nitrates in comparison with late summer tillage. Depth of plowing does not cause any variation of soil moisture. Seven-inch compared with 3-inch plowing, has shown an increase in nitrate accumulation. Plowing in July resulted in greater nitrification and higher yields than a scraping of the soil to eliminate weeds and no plowing. Hence plowing is beneficial for reasons other than the killing of weeds. Plowing under about 3,000 pounds of straw per acre in July or disking the straw into land immediately after plowing in July, has occasioned a slight increase in yield of wheat. Applying straw as a top dressing during winter or burning the stubble before plowing have decreased the yield.—*L. E. Melchers*.

6005. **SHIFYA, KISOBURO.** *Experiments on Kantenden [a kind of paddy fields].* *Dept. Agric. Govt. Res. Inst. Formosa Rept.* 14. 1-74. 1924.

6006. **SIMPSON, W. F.** *An economic study of methods of harvesting soybeans for seed.* *Jour. Amer. Soc. Agron.* 17: 557-567. 1925.—The investigation did not show the best method for harvesting soybeans for seed. It is evident that a more efficient type of row harvester could be developed.—*F. M. Schertz*.

6007. **SINGLETON, GARY H.** *Nitrogen availability studies on crops harvested at different stages of growth.* *New Jersey Agric. Exp. Sta. Bull.* 421. 1-27. 7 fig. 1925.—This study was conducted with field-grown wheat and rye and with rape, millet, buckwheat and oats grown in the greenhouse. Nitrate of soda, with 62.60%, gave highest average recovery of N, $(\text{NH}_4)_2\text{SO}_4$ was second with 54.24% while tankage and calcium cyanamide gave 46.62 and 25.84%, respectively. The yields of dry matter were in the same order. The percentage of N was found to be highest in plants during the first 3 weeks of growth.—*Wm. H. Martin*.

6008. **SIRRINE, EMMA, F.** *Occurrence of seeds of Sudan grass-sorghum hybrids.* *Proc. Assoc. Official Seed Analysts of North America* 1925: 14. 1925.—An examination of 220 samples of Sudan grass seed showed that many contained seed resembling those of sorghum as well as seed which appeared to be of hybrid origin. Field tests made upon selected samples showed that only about $\frac{1}{2}$ of the hybrids were detected by the seed characters. Because of the readiness with which Sudan grass and sorghums hybridize it is advisable to grow the seed with care to prevent crossing.—*M. T. Munn*.

6009. **SKINNER, J. J., AND W. F. PATE.** *The influence of potash on cotton bolls and foliage on a potash deficient soil.* *Jour. Amer. Soc. Agron.* 17: 550-556. 1925.—Wanamaker's Cleveland cotton and Mexican big boll were grown on Wickham fine sandy soil. Phosphate had very little effect upon yield but did affect the maturing of the cotton. Nitrogen produced a vigorous plant capable of producing an abundance of fruit. Potash is a prime factor in the metabolism of the plant in rust prevention, boll formation and maturation. Potash was very striking in its effects upon cotton on this soil and its influence is more pronounced than on most soils of the cotton belt.—*F. M. Schertz*.

6010. **SMITH, RALPH W.** *The tillering of grain as related to yield and rainfall.* *Jour. Amer. Soc. Agron.* 17: 717-725. 1925.—In spring wheat, oats and barley, no close relation was found between extent of tillering and yield. Comparing the 3 crops, oats yielded most and tillered least and barley slightly exceeded wheat in both tillering and yield. A close relationship exists between rainfall and tillering and between tillering and yield.—*F. M. Schertz*.

6011. SNELL, KARL. Die Kartoffel. Geschichte, Bau und Lebenserscheinungen, Nutzen und Anbau von *Solanum tuberosum* L. mit einer Beschreibung der Zuchtstätten der deutschen Kartoffel, der Kartoffelsorten und der Kartoffelkrankheiten. [The potato. History, structure and physiology, uses and culture of *Solanum tuberosum* with a description of the breeding stations of the German potato, potato varieties and potato diseases.] 96 p. T. Fischer: Freiburg, 1922.

6012. SOUTHWORTH, WM. Preliminary studies in forage crop improvement. *Sci. Agric.* 5: 301-305. 1925.—This is a brief summary of the work on forage crops at the Manitoba Agric. College. Of the grasses, awnless brome grass, western rye grass, meadow fescue, timothy, red top, Kentucky blue grass, and Canada blue grass have been found most satisfactory. Alfalfa, however, has shown more promise than any of the grass or other legume crops. One strain of Grimm and 2 of sand lucerne have given very promising results in hardiness. Work has also been carried out on the problem of seed production in alfalfa but without definite results.—*T. G. Major*.

6013. SPAFFORD, W. J. The spacing of seed wheat. *Jour. Dept. Agric. South Australia* 29: 435-438. 1925.—Experiments indicate that heavy sowing increases yield and reduces weed damage in weedy land. In weedy soils the best results were obtained with wheat planted 2 inches apart.—*W. M. Carne*.

6014. SPRAGG, FRANK A. A northern seed maturing hemp. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 168. 1 fig. 1923.—A variety of hemp (no name given) secured by crossing "has produced a strain that combines both earliness and productivity, and produces seed safely under Michigan conditions."—*A. J. Pieters*.

6015. SPRAGG, FRANK A. Improved Robust beans. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 116-118. 1 fig. 1923.—This is a re-selection of the original Robust bean for increased yield, being about 25% more prolific than the parent variety.—*Ernst A. Bessey*.

6016. SPRAGG, FRANK A. Rosen rye. *Michigan Agric. Exp. Sta. Spec. Bull.* 105. 1-11. 7 fig. 1921.—Rosen rye arose from an unnamed sample of pedigreed rye of Russian origin, given to the Michigan Agricultural Experiment Station by J. A. Rosen, in 1908. This has been grown extensively in Michigan and other states. It yields over 20 bushels per acre as compared with less than 15 for common rye. The strain has been kept pure by growing it for "certified seed" isolated from other rye. This is now done on an extensive scale by growing 70-120 acres of Rosen rye on South Manitou Island in Lake Michigan each year, no other rye being grown on the island.—*Ernst A. Bessey*.

6017. SPRAGG, FRANK A., AND E. E. DOWN. Hardigan alfalfa. *Michigan Agric. Exp. Sta. Quart. Bull.* 4: 74-75. 1922.—A brief account of this new variety and a history of its development at Michigan Agricultural College.—*Ernst A. Bessey*.

6018. SPRAGG, F. A., AND E. E. DOWN. The Robust bean. *Michigan Agric. Expt. Sta. Spec. Bull.* 108. 1-9. 8 fig. 1921.—In 1908 a white navy bean was selected from test rows of many commercial varieties from various sources and named Robust because of its vigor, high yield and freedom from disease, especially mosaic. From time to time special selections have been made from this original strain, these being the improved Robust bean now distributed. It is not an early bean but is a much larger yielder and holds its foliage much later than most varieties. It does not drop its flowers in hot weather if the soil moisture is sufficient for maintenance. The best yields in a 4-year series are obtained with 40 pounds of seed per acre, the best time for planting being not later than the 1st week in June.—*Ernst A. Bessey*.

6019. STANTON, T. R., AND F. A. COFFMAN. Oat improvement in the western half of the U. S. *Jour. Amer. Soc. Agron.* 17: 640-641. 1925.—Introduction of foreign varieties, pure line selection, cross-breeding and hybridization are the methods used for improving the yields.—*F. M. Schertz*.

6020. STARZYNSKI, ZYGMUNT. Studja nad wystepowaniem utworow redzinnych. [Studies on the formation of the "Rendzina" soils.] *Pamietnika Panstw. Inst. Nauk. Gospodar. Wiej. w Pulawach.* 4: 244-301. 1923.—The author studies the definition, origin, classification, composition and extent of the "Rendzina" soils in the highland of Lublin, Poland. He differentiates between the proper "Rendzina" soils and the deluvial "Rendzina" soils which

are called "Borowina." "Chrap" are Rendzina soils deprived of calcium.—(*Abstr. from English summary.*)

6021. STEINBRUCK, KARL. (Ed.) *Handbuch der gesamten Landwirtschaft*. [*Handbook of general agriculture.*] 3rd ed. revised and enlarged. Vol. 1. 492 p.; Vol. 2. 640 p.; Vol. 3. 547 p.; Vol. 4. 776 p. Max Jänecke: Leipzig, 1923.

6022. STEVENS, O. A. Variations in analyses of orchard grass seed—Referee's sample. *Proc. Assoc. Official Seed Analysts North America* 1925: 28-31. 1925.—A consideration and statistical study of the variations in a series of analyses or tests of a bulk of seed as represented by replicate samples. The various factors which contribute to or may influence variation as discussed.—*M. T. Munn.*

6023. STEWART, F. C. Potato seed experiments: whole small tubers vs. pieces of large tubers of the same plant. *New York [Geneva] Agric. Exp. Sta. Bull.* 491. 1-30. 1922.—Small tubers weighing between 1 and 2 ounces each and an equal number of pieces cut from large tubers of the same plants were planted in alternate rows. A record was made of the number of plants produced by each kind of "seed" and of the height, number of stalks, number and weight of large tubers, and number and weight of small tubers produced by each plant. The principal conclusion drawn is that, for seed purposes, uncut tubers between 1 and 2 ounces in weight are at least as good as, and, probably, a little better than, pieces of equal weight cut from large tubers of the same plant.—*Author.*

6024. STEWART, F. C. The relation of moisture content and certain other factors to the popping of popcorn. *New York [Geneva] Agric. Exp. Sta. Bull.* 505. 1-70. 4 pl. 1923.—Numerous popping tests were made using 80-gram quantities of corn in a new style of popper over a gas flame. Popping quality was measured by the volume of the corn after popping. It was shown that popping quality is largely dependent upon the moisture content of the corn, 13-15% being the most favorable. Popcorn stored in heated buildings soon becomes too dry to pop well. Tests were made to determine the effect of preheating the popper; of adding lard, Wesson oil, and salt; of the length of time required for popping; and of adding water to overdry popcorn. Tests of 9 varieties of popcorn indicate that Japan Rice ranks highest in popping quality. Suggestions are made for the handling, storing, and popping of popcorn.—*Author.*

6025. SWEET, CARL. Application of seed legislation in Canada. *Proc. Assoc. Official Seed Analysts North America* 1921: 33-34. 1923.

6026. SWEET, CARL. Quality standards in relation to the Canadian system of grading. *Proc. Assoc. Official Seed Analysts North America* 1921: 32. 1923.

6027. TABENTSKIĬ, O. Bilderatlas der Anatomie und Biologie der Zuckerrübe (*Beta vulgaris* L. var. *saccharifera*). Der Atlas wurde rezensiert von der Redaktions und Terminologischen-Kommission bei der Botanischen Section des Landwirtschaftlich-wissenschaftlichen Komitees der Ukraine. [Illustrated atlas of the anatomy and biology of the sugar beet. The atlas has been approved by the editorial and terminological commission of the botanical section of the agricultural-scientific committees of the Ukraine.] 142 p. Kiev, 1922.

6028. [TALANOV, V. V.] Таланов, В. В. Наилучшие сорта кукурузы и площадь питания для них. [The best varieties of corn and the soil for them.] Всеукраинское Бюро Опытного Дела Нкзем'а Украины Харьков. [All-Ukrainian Exp. Bur. State Commissariat Agric. Ukraina (Kharkov).] 48 p. 22 pl. 1923.—As per data given by experiment stations of southern and southeastern Russia, the productivity of the soil for corn increases from early to late varieties. Along with the bettering of soil conditions the volume and weight of the cob also increase, as well as the number of cobs per individual plant. The period of ripening is somewhat lengthened and the size of the plant is greater.—*E. Sinskaia.*

6029. TOOLE, E. H. Changes in "Rules for Seed Testing." *Proc. Assoc. Official Seed Analysts of North America* 1925: 35-38. 1925.—*M. T. Munn.*

6030. TRELEASE, S. F., AND P. PAULINO. The effect on the growth of rice of the addition of ammonium and nitrate salts to soil cultures. *Philippine Agric.* 8: 293-313. 1920.

6031. [TSINZERLING, IŮ. D.] Цинзерлинг, Ю. Д. Материалы по культурной растительности Архангельской и Вологодской губ. и ее засоренности. [Cultivated plants and their

weeds in the province of Archangel and Vologda.] Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. & Plantbreed.] 13³: 24-42. 1922-1923 [1923].—Cultivated plants growing in provinces of Archangel and Vologda are listed and the data on the area sown in 1922, including yield and weeds, are given.—*M. Demerec*.

6032. VALE, T. Notes on the cultivation and manuring of coconuts. Jour. Bd. Agric. British Guiana 17: 234-246. 1924.—This paper consists chiefly of advice to growers as to methods of fertilizing and cultivating estates devoted to coconut production.—*J. P. Jones*.

6033. VAUGHAN, L. H. Safeguards in garden seed business. Proc. Assoc. Official Seed Analysts North America 1921: 135-139. 1923.

6034. VENKATRAMAN, RAO SAHEB T. S. Hybridizing and testing cane. South African Sugar Jour. 9: 701, 703. 1925.—The breeding technique adopted at the Coimbatore Station, especially as regards the study of parents and the bags used in crossing work, is briefly sketched.—*Nellie E. Fealy*.

6035. VEVE, R. A. What sugar cane varieties to plant. Jour. Dept. Agric. Porto Rico 9: 273-276. (1925).—This is a discussion of the relationship of varieties to soil, climate and other agencies and is illustrated by references to a number of varieties in Porto Rico. Varieties that are excellent for one locality may be unsatisfactory in localities very close to the finest.—*Mel. T. Cook*.

6036. VIDAL, D, ET J. HÉBRARD. Essais de blés à l'école nationale d'agriculture de Montpellier en 1921-22. [Tests of wheat at the national school of agriculture of Montpellier in 1921-1922.] Prog. Agric. et Vitic. 78: 538-544. 1922.

6037. VILCOQ. La chlorure d'ammonium à l'école du Chesnoy. [Ammonium chloride at the school of Chesnoy.] Prog. Agric. et Vitic. 82: 403-404. 1924.—A preliminary report comparing the effect of ammonium chloride with sodium nitrate and ammonium sulphate on wheat and beets.

6038. [VYSOTSKII, G.] ВЫСОЦКИЙ, Г. О перспективах нашего степного полеводства и скотоводства. [Our farming prospects in the steppes from a botanical point of view.] Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. & Plandbreed.] 13³: 3-20. 1922-1923 [1923].—Weeds growing in different periods of the year are discussed.—*M. Demerec*.

6039. WAGNER, F. Die grosse Brennessel als Futterpflanze. [The large nettle as a fodder-plant.] Illus. Landw. Zeitg. 45: 405-408. 1925.—*Urtica dioica* L. is recommended as a feed for domestic animals. Chemical analyses showing its high food value are reported.—*John W. Roberts*.

6040. WAHLEN, F. T. Seed testing for international trade with Canada. Proc. Assoc. Official Seed Analysts North America 1925: 27-28. 1925.—A new feature embodied in the Canadian Seed Importation Regulations provides that any foreign seed testing station approved by the Association of Official Seed Analysts of North America or the International Seed Testing Association may test seed destined for exportation to Canada. Certificates of such approved Stations will be accepted by the Canadian Customs Officials as being equivalent to certificates issued by Canadian Seed Testing Stations as evidence under the Import Regulations. A form of report to be used is given.—*M. T. Munn*.

6041. WAHLEN, F. T. The determination of the origin of agricultural seeds with special reference to red clover. Sci. Agric. 5: 369-374. 1925.—The weed seed content of a seed sample is the safest guide for the determination of its origin but must be taken in conjunction with other characteristics, such as seed color, the 1000 kernel weight, and mineral, vegetable and animal impurities.—*T. G. Major*.

6042. WARD, F. E. Experiments on manuring rape in Canterbury. New Zealand Jour. Agric. 31: 308-311. 1925.

6043. WATT, W. LYNE. Kikuyu grass. Kew Bull. 1925: 403. 1925.—*Pennisetum clandestinum* is native of Kenya Colony, Africa. It is well established in South Africa, Australia, and New Zealand and makes excellent grazing.—*T. J. Fitzpatrick*.

6044. WELLS, W. G. Cotton thinning and spacing experiments for the season 1924-1925. Queensland Agric. Jour. 24: 532-535. 1925.—The results of experiments carried out at Monal Creek, Home Hill and Callide Cotton Research Farm (Queensland) are detailed. It is concluded that the problem of spacing rows and plants is very difficult, and a system that gives

the maximum results one season may be unsuitable for the same soil under different climatic conditions.—*W. D. Francis.*

6045. WELTON, F. A., AND V. H. MORRIS. Climate and the clover crop. *Jour. Amer. Soc. Agron.* 17: 790-800. 1925.—Increased clover yields are positively correlated with increase in rainfall and cloudiness for April, May and June, an increase in total snowfall, an increase in temperature for the months of March and April, and a decrease in temperature for May and June.—*F. M. Schertz.*

6046. WHITCOMB, W. O. Germination of hard seeds in alfalfa and sweet clover as the season advances. *Proc. Assoc. Official Seed Analysts North America* 1925: 31-32. 1925.—A series of experiments shows that the germination of both the original sample and the hard seed separations of alfalfa seed is much greater during the first 2 weeks of the test than at any other time. The germination of the hard seed in the field was much more rapid than in either of the other 2 tests, indicating that neither the blotter (laboratory) nor the soil test in the laboratory will give a true index of the germination of hard seed in alfalfa under field conditions. The total germinations for sweet clover were all much lower than those for alfalfa, substantiating previous results that hard seed of sweet clover are much more resistant than those of alfalfa.—*M. T. Munn.*

6047. WHITCOMB, W. O. Interpretation of the seed value of newly threshed winter wheat. *Proc. Assoc. Official Seed Analysts North America* 1925: 41-42. 1925.—From 4 years' work in Montana the author concludes that the ordinary laboratory germination test on newly harvested winter wheat is not a true index of its value as seed. A special method by which the testing material is held at 4-6°C. for 5 days and followed by alternation of temperature of 20-30°C. for 3 days gives a dependable test in the laboratory that can be used as an interpretation of its seed value for immediate planting. The field germination test may be expected to be 20-30% lower than that found by the special method of testing new wheat in the laboratory. There is no material difference between winter wheat produced from old and new seed as judged by the following field studies: Time from seeding to emergence of plants through the soil; number of plants per acre according to fall and spring counts; time from emergence of plants to maturity; and yield of grain per acre.—*M. T. Munn.*

6048. WHITE, J. W., AND F. J. HOLBEN. Development and value of Kentucky blue grass pastures. *Pennsylvania Agric. Exp. Sta. Bull.* 195. 1-24. 4 fig. 1925.

6049. WIEGAND, G. Verwertung von Rübenblättern und Köpfen nach den neuesten Erfahrungen. [Utilization of the leaves and tops of beets according to the latest experiences.] *Zuckerrübenbau* 7: 134-137. 1925.—Beet leaves and tops are fed green, dry, or ensiled. Washing saves 30-50% of the feed when it is fed green. In the silos, the small pieces pack well and prevent molding. As the slicing is combined with pressing, the chopped material contains only 25% of dry matter and 25-40% of fuel is saved in drying. The earth washed out is gathered and automatically discharged by the machine described.—*B. Nebel (transl.).*

6050. WIENER, W. T., AND R. BROADFOOT. The amount of variability which may be expected to occur in a determination of comparative yields in small grains. *Sci. Agric.* 5: 305-312. 1925.—This is a preliminary report on a series of field plot tests commenced at Winnipeg in 1924. Under variable soil conditions systematic distribution of a number of plots of each variety is necessary to insure a reasonable degree of precision. Under the conditions of the experiment the $\frac{1}{16}$ acre plot replicated 3-4 times has given the best results. The removal of the 2 border rows on either side and to a depth of 12 inches on the ends is sufficient to overcome the effect of fallow borders.—*T. G. Major.*

6051. WILKINS, V. E. Agricultural research and the farmer. A record of recent achievement. 168 p. H. M. Stationery Office: London, 1922.

6052. WILLIS, HORACE H. Utilization of Pima cotton. *U. S. Dept. Agric. Dept. Bull.* 1184. 1-26. 1923.

6053. WILLIS, J. C. Agriculture in the tropics: an elementary treatise. (Cambridge Biological Series.) 3rd. ed., rev. xvi + 223 p. 24 pl. University Press: Cambridge, 1922.

6054. WILSON, A. C. The seed analysts' future. *Proc. Assoc. Official Seed Analysts North America* 1921: 35-36. 1923.

6055. WITTMACK, LUDEWIG. Landwirtschaftliche Samenkunde. [Agricultural seeds.] P. Parey: Berlin, 1922.

6056. WITYN, J. Ueber die bessere ausnutzung der im Boden befindlichen Phosphorsäure. [Better utilization of the phosphoric acid found in the soil.] *Zeitschr. Pflanzenernähr. u. Düngung* 6: 27-51. 1925.—The reaction of the soil is especially significant in regard to the manner in which the phosphate is bound in the soil. In neutral or weakly alkaline reactions the phosphate is bound with Ca while in acid soils the phosphate is bound with Fe or Al or with organic matter. Then, by altering the soil reaction the binding of the phosphate is also altered. In acid soils the amount of phosphate is usually greater than in neutral soils. In strongly acid soils the author recommends the use of crude phosphate.—*F. M. Schertz.*

6057. WOLFE, T. K. Observations on the blooming of orchard grass flowers. *Jour. Amer. Soc. Agron.* 17: 605-618. 1925.—Observations recorded secured information in regard to the process, duration, period and order of blooming of orchard grass flowers. The opening of the flowers averaged 15 minutes. From opening to closing required an average of 2 hours, 26 minutes. It required an average of 6.7 days for all the flowers on a single panicle to bloom, and 13.5 days for all the flowers on a single plant. From sunrise to noon, 76.9% of the flowers bloomed, 6.6% from noon to sunset, 0.3% from sunset to midnight and 16.3% from midnight to sunrise. The peak of blooming was 8-9 a.m.—*F. M. Schertz.*

6058. WOOD, ALFRED. The home-grown sugar industry. W. Morris: London, 1925.

6059. YAMAMURA, ETSUZO. Fertilizing experiments of sugar cane in various localities of Formosa. Dept. Agric. Govt. Res. Inst. Formosa Rept. 13: 1-219. 5 maps. 1924.

6060. YOUNGBERG, STANTON. Twenty-fourth annual report of the Bureau of Agriculture (Philippine Islands) for the Fiscal year ending December 31, 1924. 284 p. 29 pl. Bureau of Printing: Manila, 1925.

6061. ZAVITZ, C. A. Co-operative experiments with farm crops. *Sci. Agric.* 6: 49-53. 1 fig. 1925.—This is an outline of the co-operative experimental work being carried out under the direction of the Ontario Agricultural and Experimental Union. Formed in 1879, the Union commenced work in 1886 with 12 co-operators, and in 1925 the number has reached 2831. Experiments are conducted in all phases of agricultural work.—*T. G. Major.*

6062. ZAVITZ, C. A. Seven varieties of oats eligible for registration. A promising new variety originated at Guelph. *Sci. Agric.* 5: 246-249. 1925.—As a result of a 14-year test with O. A. C. No. 72, O. A. C. No. 3, Abundance, Gold Rain, Victory, Banner, and Alaska oats it has been shown that O. A. C. No. 3 is the best of the early, and O. A. C. No. 72 of the late varieties.—A new variety (O. A. C. No. 144) has been originated, which gives a higher yield than O. A. C. No. 72. It is a tall, vigorous, broad-leaved, stiff-strawed, late variety with a spreading head and a long, slightly brownish white grain practically free from awn.—*T. G. Major.*

6063. ZEMACH, S. The Egyptian clover (Bersim). (In Hebrew with English summary.) Zionist Organization Inst. Agric. and Nat. Hist. Agric. Exp. Sta. Div. Extension Circ. 8. 1-50. 1925.

6064. ZYL, C. E. VAN DER. Samenvattende bewerking van de resultaten der proefvelden by de rietcultuur op Java. 21 E Bijdrage. Invloed van den planttijd van het riet op het suikerproduct. [Summary of the results of experimental fields in the Java sugar cane culture. 21st contribution. Influence of time of planting of the cane on the sugar product.] *Arch. Suikerindus. Nederland.-Indië, Meded. Proefsta. Java-Suikerindust.* 1925¹⁴: 443-496. 6 fig. 1925.

SOIL SCIENCE (EDAPHOLOGY)

6065. ANONYMOUS. Lime in soils. *Jour. Dept. Agric. Victoria* 23: 506-507. 1925.

6066. ANONYMOUS. Sulla stanchezza del terreno. [Soil exhaustion.] *Boll. Mens. Inform. Notiz. R. Staz. Patol. Veg. Roma* 1: 51-52. 1920.—Starting from the study of the tendrils of grape vines, the method of repeating many times a known culture in the same containers, as opposed to using renewed soil or the same soil sterilized, was adapted. The extract of exhausted soil was then made to act upon seed to study the effects on germination or on young plants; it was thus shown to contain harmful substances, of unknown nature, which duly diluted would produce an injurious effect upon the same or other plants.—*R. Ciferri (translated by J. M. Fogg, Jr.).*

6067. ALBERT. Der waldbauliche Wert der Dünensande sowie der Sandböden im allgemeinen. [The silvicultural value of dune-sands; also of sandy soils in general.] Zeitschr. Forst.- u. Jagdw. 57: 129-139. 1925.—Variations in growth encountered chiefly in stands of pine, also beech and oak, on the inland sand soils of the forest ranges of Eberswalde and Biesenthal are due to actual soil variations. The comparative fertility depends upon the water-holding capacity of the sands, and the latter is governed by the percentage of fine earth particles under 0.02 mm. in diameter in the soil. In pure sand soils, an average fine earth content of 10% represents the existence minimum for Scotch pine. The poorer pine soils may be improved to a certain extent by humus culture; a humus content of 3% having a physical reaction upon the forest growth approximately equal to an increase of $7\frac{1}{2}\%$ in fine earth. However, the effect is confined entirely to the surface soil. The constant factors of climate and geology in the end definitely delimit the extent to which the variable factors of management may influence growth. A careful study of the soil itself will furnish a reliable indication of what may be produced.—*J. Roeser, Jr.*

6068. ALBRECHT, W. A., AND R. E. UHLAND. Nitrate accumulation under the straw mulch. Soil Sci. 20: 253-267. 1925.—A study of certain factors which might account for decrease in nitrate accumulation under a straw mulch. The results obtained led to the conclusion that the straw mulch "cut down evaporation, thereby increasing the moisture, lowering the temperature and preventing the normal exchange of air, all of which induce a poor physical condition and unfavorable environment for nitrate accumulation."—*P. L. G. (contrib. by Absts. Bact.).*

6069. BATHAM, H. N. Nitrification in soils. Soil Sci. 20: 337-351. 1925.—A study of the relative rate at which the N contained in leucine, phenylalanine, tryptophane, tyrosine, cystine, alanine, and ammonium sulphate was nitrified in soil. Ammonium sulphate was nitrified more rapidly and more completely than any of the amino acids. Tyrosine and cystine were less available than the other amino acids studied. Tryptophane, containing both ring and chain N, was nitrified as rapidly as the amino acids containing only chain N. The nitrification of amino acids appears to be independent of the N:C ratio. In no case was more than approximately 50% of amino N recovered as nitrate N.—*P. L. G. (contrib. by Absts. Bact.).*

6070. BEAR, FIRMAN EDWARD. Soil management. iii + 268 p. J. W. Wiley & Sons, Inc.: New York, 1924.

6071. BIRD, M. Deep plowing in relation to soil water in British Guiana. Jour. Bd. Agric. British Guiana 17: 176-178. 1924.—A brief discussion is given of the difficulty encountered in some of the low-lying sugar cane areas where attempts have been made at drainage. This trouble seems to be an accumulation of water which does not move readily through the subsoil. This writer advocates as a remedy plowing the subsoil with a special subsoil plough made for the purpose.—*J. P. Jones.*

6072. BLAIR, W. S. Fertilizer tests with and without ground limestone. Sci. Agric. 5: 199-201. 1925.—The experiment has been in progress since 1914, using a 3-year rotation of potatoes, grains, and clover and timothy hay. Limestone is apparently of greatest value to the hay crop, particularly clover, and wheat also responds to a marked degree. Oats succeed well on a decidedly acid soil. The use of limestone has developed serious potato scab conditions and consequently it should be applied only when seeding down to grain.—*T. G. Major.*

6073. BLANCK, E., UND F. ALTEN. Ein weiterer Beitrag zur Wirkung des zeotokols (Doloritmehls) auf die Pflanzenproduktion. [Action of Zeotokol (powdered dolorite) on plant growth.] Jour. Landw. 73: 213-218. 1925.—This material was found to have no significant effect upon plant growth.—*F. M. Schertz.*

6074. BLANCK, E., UND F. ALTEN. Untersuchungen über die physiologische Bedeutung der Nährstoffauszüge, ein Beitrag zur Bestimmung des Düngebedürfnisses des Bodens auf chemischem Wege. [Physiological importance of extractable nutrients, a contribution to the determination of the manurial requirements of soils by chemical means.] Jour. Landw. 73: 219-230. 1925.—The amount of phosphoric acid extracted from a soil by a variety of acid solvents was determined, the weaker acids being used both with and without making allow-

ance for the carbonates present in the soil. Oats were then grown on sand cultures using phosphoric acid equivalent to the varying amounts extracted by the different solvents, each pot having the same application of other essential nutrients. It is concluded that only dilute acids are suitable solvents for the determination of assimilable phosphoric acid in soils. Of those tried, 1% nitric acid, 1% acetic acid, and 0.5% citric acid gave satisfactory results, if the amount used was adjusted to allow for neutralization by the carbonates present. Water saturated with CO₂ was, however, quite unsuitable.—*F. M. Schertz.*

6075. BLANCK, EDWIN, F. KUNZ, UND F. PREISS. Über mährische Rot-Erden. [Red soils of Moravia.] Landw. Vers. Stat. [Berlin] 2 Abt. 101: 246-260. 1923.

6076. BOLLEN, W. B. Biochemical effects of gypsum on Iowa soils. Soil Sci. 19: 417-440. 1925.—A study is reported of the effect of adding gypsum to a soil in varying quantities, and in combination with rock phosphate, sulphur and limestone, upon the numbers of bacteria, fungi and actinomycetes and upon the activity of nitrifying and sulphur oxidizing bacteria. Studies were made both in fallow soil and in soil cropped to red clover, alfalfa and soybeans. The effect upon plant growth, nitrogen content of plants, sulphate and nitrate content of the soil, and, in field experiments, the lime requirement and pH value of the soil are also reported. Gypsum had practically no effect on the numbers of microorganisms, nitrification, sulphofication, or lime requirement of the soil. Sulphur increased the sulphofying power of the soil. Plant growth, particularly alfalfa, was materially increased by gypsum and sulphur, the gypsum apparently acting as a direct sulphur fertilizer.—*P. L. G. (contrib. by Absts. Bact.).*

6077. BORDAS, JEAN. Étude sur les procédés pour la détermination de l'azote dans les engrais par réduction à l'état d'ammoniaque. [Study of methods for determination of nitrogen in fertilizer by reduction to ammonia.] Ann. Sci. Agron. 41: 14-27. Illus. 1924.

6078. BOUYOCOS, GEORGE. Frost and muck soils. Michigan Agric. Exp. Sta. Quart. Bull. 4: 85-86. 1922.—Muck soils are liable to frost because they radiate their heat rapidly from the surface but are such poor conductors of heat that the cold surface layer is not warmed by the layers below. On the other hand, clay is a good conductor of heat so that the surface layer receives heat from below and does not become as cold. Wet muck soil is a better conductor of heat and less subject to frost.—*Ernst A. Bessey.*

6079. BRENNER, WIDAR. Über das Vorkommen und Gedeihen von Azotobacter in finn-ländischen Böden. [Presence and growth of Azotobacter in Finnish soils.] Geologiska Kommissionen i Finland, Agrogeologiska Meddel. 20. 3-15. 1924.

6080. BRIOUX, CH., ET J. PIEN. Emploi de l'électrode à quinhidrone pour la détermination du pH des sols. [Use of the quinhidron electrode in the determination of the pH of soils.] Compt. Rend. Acad. Sci. [Paris] 181: 141-143. 1925.

6081. BUNBERT, J. Die Stockrodung auf Talsandböden in bodenphysikalischer Beziehung. [Stump grubbing in sandy bottom soils in relation to physical soil qualities.] Zeitschr. Forst.- u. Jagdw. 57: 641-664. 1925.—Experiments indicate that a definite structure is lacking in sandy soils and water movement is effected through the whole mass. Permeability is dependent upon pore volume, the structure of the humus, and moisture content of the soil. Other experiments indicate that it also is governed by ways in which the various sized soil particles are assembled. Stump grubbing does not result in compacting or soil layering, but secures a loosening of the soil lasting through a decade, and also increases water capacity and permeability. In dry periods, grubbed soil is apt to desiccate more quickly than untouched or shallow cultivated soil. Silviculturally, soil from which stumps have been grubbed offers better conditions for growth to young plants than ungrubbed soil during favorable years. This soil, however, seems to deteriorate, and gradually develops disadvantages, which culminate in the gradual failing of trees in stump holes. The evil effects of stump grubbing on subsequent growth are due to root flattening. A lengthy bibliography is appended.—*J. Roeser, Jr.*

6082. BURD, JOHN S. Relation of biological processes to cation concentrations in soils. Soil Sci. 20: 269-283. 1925.—A study of the effect of bacterial oxidation and reduction upon the cation concentration of soil solutions.—*P. L. G. (contrib. by Absts. Bact.).*

6083. CHARLTON, J. The buffer action of some Burma soils. Mem. Dept. Agric. India. Chem. Ser. 7^s: 1924.

6084. DE LONG, W. A. Availability of organic nitrogenous fertilizers (a résumé). *Sci. Agric.* 5: 205-210. 1925.—The vegetation test method of determining the availability of the organic N in fertilizers is slow, expensive, and onerous and is of value only as a check on more rapid and easily conducted laboratory tests. There are 2 main types of laboratory tests, namely, chemical (such as pepsin-HCl digestion and alkaline and neutral permanganate) and bacteriochemical (ammonification and nitrification). The rate of availability of the organic nitrogenous materials depends upon the ease with which the proteins can be hydrolyzed to amino acids and the latter changed to ammonia and nitrates by micro-organisms.—*T. G. Major.*

6085. DEUSS, J. J. B. Analyse van Leguminosenzaden. [Analyses of leguminous seed.] *Thee* 6: 37. 1925.—The seed of a number of the plants used as green manures in the tea plantations were analyzed to determine their potentialities for fertilizer cake. In general the N content was sufficient, but the P figures are less favorable. The oil content is in most cases small, and should not interfere with the decomposition of the material.—*Carl Hartley.*

6086. DEUSS, J. J. B. Over de theegronen van Java en Sumatra. [The tea soils of Java and Sumatra.] *Dept. van. Landb. Nijv. en Handel Proefsta. Thee Nederland. -Indië Mededeel.* 89: 9-126. 1924.

6087. DOBRESCU, I. Metode și erori posibile în aprecierea solurilor. [Methods and possible errors in determining fertilizer needs of soils.] *Viața Agricolă* 14: 198-210, 230-241. 6 fig. 1923.—The author, comparing experimentally the methods for determining fertilizer needs of soils, establishes the fact that the surest indications of fertilizer needs are given by the synthetic method or by tests with plants in flower-pots. The results from these experiments show in the majority of the soils in Rumania (Old kingdom) that the fertilizing element most needed is probably phosphoric acid.—*Emil Pop.*

6088. DOBRESCU, I. M. Var-azotul și necesitatea îngrășămintelor axotoase. [Calcium cyanamide and the necessity of azotic manure.] *Viața Agricolă* 14: 38-47. 1923.—After original experiments (with oats) the author recommends the use of calcium cyanamide as a manure, but only after a physico-chemical analysis of the soil.—*Emil Pop.*

6089. DULEY, F. L. Soil erosion from early plowed wheat land. *Jour. Amer. Soc. Agron.* 17: 731-734. 1925.—In Missouri early plowing has been recommended as a means of increasing wheat yields in the corn belt. This has resulted in considerable soil erosion. Means for preventing erosion are discussed.—*F. M. Schertz.*

6090. DULEY, F. L. Soil erosion of soy bean land. *Jour. Amer. Soc. Agron.* 17: 800-803. 1925.—A report of soil lost by erosion from soybean land on a 3.68% slope in Missouri. Erosion on soybean land was 84% of that on corn land and 86 times as much as from sod land.—*F. M. Schertz.*

6091. FIEGER, ERNEST AUGUST. Hydrogen-ion concentration studies of Minnesota soils. 55 p. Univ. Minnesota, 1924.—This thesis reports a study of the H-ion concentration of a large number of Minnesota soils representative of the more lime-deficient mineral soil areas. The electrometric method of determining the H-ion concentration was found most reliable for this work. Using surface soils of the Late Wisconsin Drift, the southeastern loess and the sandy outwash plains, the buffer action was found to rise and fall with the moisture equivalent. In all the soils studied the H-ion concentration was found to decrease regularly with depth, indicating that leaching is the chief cause of the acid condition. Using pot cultures, the growing of plants decreased the H-ion concentration. Examinations were made of plots in experimental fields to determine the comparative H-ion decrease resulting from the use of varying quantities and different kinds of lime supplying materials.—*T. D. Rice.*

6092. FISCHER, H. Die bakterielle Schwefeloxydation in Teichböden und ihre praktische Bedeutung. [The bacterial oxidation of sulphur in pond soils and its practical importance.] *Centralbl. Bakt. [etc.] II Abt.* 65: 35-42. 1925.—Oxidation of sulphur is carried out in pond soils, in a manner similar to nitrification, by autotrophic bacteria, which are stimulated by the alkalinity of the medium and injured by acidity and organic matter. The H_2SO_4 formed can make available phosphoric acid out of the soil phosphates, a process so important for fish production. The activity of $(NH_4)_2SO_4$, kainit, kieserit, etc., should be tested as to the eventual dissolving action of the SO_4 -ion.—*S. A. W. (Contrib. by Absts. Bact.)*

6093. FORTIER, SAMUEL. Irrigation requirements of the arable lands of the Great Basin. U. S. Dept. Agric. Dept. Bull. 1340. 1-54. 1925.
6094. FRECKMANN, W. Die Erschließung und Bewirtschaftung des Niederungsmoores. [Drainage and management of marshlands.] 153 p. Paul Parey: Berlin, 1921.—In 1877 the first scientific investigation of German marshlands was started by the Bremen Experiment Station at Neuhammerstein in the largest river-marsh of Pommern (Lebamoor). This soil is high in N, but poor in minerals. Studies were conducted on permanent pastureland, permanent meadowland and on land devoted to cultivated field crops. The methods of drainage differ with the different purposes for which the soil is used. A lower water-table must be maintained for the land in cultivated crops than for pasture or meadowland; this necessitates deeper and more frequent drains. Fertilization studies show potash and phosphoric acid both greatly needed, but for cultivated crops heavy applications of phosphoric acid were found injurious in many cases. Light winter liming is recommended for the pasture. Nitrogen in any form gave increased yields of turnips, with NaNO_3 most effective. Green manure or stable manure had little effect on yields. Startling crop increases were obtained with CuSO_4 on this soil, where it was applied at the rate of 20-50 pounds per acre, prior to seeding. Since in this low-lying country frost injury to crops is frequent, hardy crops such as rye, oats and roots are best adapted. Mechanically compacting the loose peat-like soil was found to increase somewhat the yields of cultivated crops.—R. R. McKibbin.
6095. GAINES, P. L. Inoculating soil with azotobacter. Soil Sci. 20: 73-87. 1925.—Experiments covering several years' study of the effect of introducing *Azotobacter* into acid soils and into acid soils treated to correct the acid condition, are reported. A permanent *Azotobacter* flora could not be established in *Azotobacter*-free soils merely by introducing active living organisms. When the bacteria were introduced along with sufficient basic materials (MgCO_3 , CaCO_3) to make and maintain a favorable reaction an *Azotobacter* flora could be established. The N-fixing ability, as measured in the laboratory, of an *Azotobacter*-free soil was materially increased when an *Azotobacter* flora was established.—P. L. G. (Contrib. by Absts. Bact.)
6096. GIBBS, WILLIAM M., H. W. BATCHELOR, AND H. P. MAGNUSON. The effect of alkali salts on bacteriological activities in soil: I. Ammonification. II. Nitrification. III. Ammonification, nitrification and crop yield. Soil Sci. 19: 333-379. 1925.—Varying quantities of the 3 alkali salts, Na_2CO_3 , NaCl , and Na_2SO_4 , alone, in combinations of 2, and in combinations of all 3, were added to a soil. The rate of ammonification and nitrification and the quantities of each salt present were measured at the beginning, after 2 weeks, after the 1st crop was harvested, and again after the 2nd crop was harvested. There was a general tendency for the concentration of the various salts to decrease as time progressed, the chloride disappearing more rapidly. Sodium carbonate stimulated ammonia formation. Sodium chloride at first toxic, later acted as a stimulant to ammonia formation; the same was true of sodium sulphate except that stimulation was delayed longer. There was little if any antagonism of the salts exhibited, some combinations being more toxic than would be expected. Toxicity could not be correlated with recoverable water-soluble salts. Sodium carbonate stimulated, NaCl depressed, while Na_2SO_4 varied in its action upon nitrification. Sodium carbonate counteracted the toxic effect of NaCl . Chloride and sulphate in combinations were generally toxic, while carbonate and sulphate in general stimulated nitrate formation. Combinations of the 3 salts were in general stimulating. The toxic or stimulating effect was not proportional to total recoverable salts. Sodium carbonate in general depressed, NaCl had little effect, while Na_2SO_4 generally stimulated growth of wheat. Two-salt combinations at first toxic later gave marked stimulation to growth of wheat in nearly all cases. The same was true of the 3-salt combinations.—P. L. G. (Contrib. by Absts. Bact.)
6097. GODLEWSKI, E. O wpływie nawozów potasowych na wysokość i skład plonów różnych roślin uprawnych. [Influence of potassium on the development and chemical composition of various cultivated plants.] Pamiętnik Państw. Inst. Naukowego Gospodarstwa Wiejskiego w Putawach. 3: 159-268. 1922.—Beans, wheat, forage beets, rye, lupins, barley, *Ornithopus sativus*, potatoes, peas, oats and sugar beets were grown on a soil poor in K at Krakowie, Poland, continuously on the same plot or in rotation in the order given above. Analysis of

dry material shows a smaller percentage of K and a larger percentage of other elements in the plants grown on K-poor soil. The differences are more pronounced in the straw than in the seed, and oats and beans show such differences more than the seed of other cereal and leguminous plants. Oats and beans thus contain less K but more N and P. No increase in Mg and Ca in the seed is noticed. The ratios $K_2O : CaO : MgO$ in the dry matter of the straw of plants grown on K-poor soils are very much changed, being in the cereals 100 : 23-28 : 7-9 in soils containing an abundance of K, while when the plants were grown on K-poor soils the ratios were 100 : 55-120 : 16-37. Legumes are dependent on the content of assimilable K more than cereals. Potato tubers form an exception, in that they contain less Mg when grown in K-poor soils, and almost as much N as K, or more; while potatoes grown on K-rich soils contain twice as much K as N. The composition of the aerial parts of the tubers is affected in a similar way. Beets, beans and potatoes respond more to the addition of K fertilizer than peas and these more than the other legumes and the cereals, of which rye and wheat respond more than barley and oats. Plants in rotation respond less to the addition of K fertilizer than the same plants grown continuously on the same plot. The powers of assimilation of K by the different plants used are discussed.—(*Abstr. from French summary.*)

6098. GORSKI MARJAN, I W. JANKOWSKA. Skład chemiczny i mechaniczny dwóch profilów gleb loessowych z Niżu nadbużańskiego. [Analyses of two profiles of loess below the River Bug near Livow.] *Rocznikow Nauk Rolniczych* 9: (1-6). 1923.—Quantity of SiO_2 decreases with depth; percentage of bivalent and trivalent metals increases with depth; that of monovalent metals decreases with depth.—*Frederick V. Rand.*

6099. GRANTHAM, G. M. Fertilizers for spring crops. Michigan Agric. Exp. Sta. Quart. Bull. 5: 95-97. 2 fig. 1923.

6100. GRANTHAM, G. M. Fertilizing heavy soils in southwestern Michigan. Michigan Agric. Exp. Sta. Quart. Bull. 6: 97-98. 1 fig. 1924.

6101. GRANTHAM, G. M. Fertilizing light soils in southwestern Michigan. Michigan Agric. Exp. Sta. Quart. Bull. 6: 99-100. 1 fig. 1924.

6102. HARMER, PAUL M. Economical fertilization of muck land. Michigan Agric. Exp. Sta. Quart. Bull. 6: 101-103. 2 fig. 1924.

6103. HARMER, PAUL M. Fertilization of Michigan muck soils. Michigan Agric. Exp. Sta. Quart. Bull. 5: 98-100. 2 fig. 1923.—The reduction in manure production in big cities in recent years has forced farmers to turn to commercial fertilizers for muck areas instead of using manure. Many experiments show that most muck areas are benefited by potash fertilizers. In some areas the addition of phosphates also is very beneficial. Nitrate of soda is of value on some types of muck, and not on others.—*Ernst A. Bessey.*

6104. HARMER, PAUL M. Liming an acid muck soil. Michigan Agric. Exp. Sta. Quart. Bull. 5: 74-78. 2 fig. 1922.—Experiments are reported on liming a piece of very acid muck drained 35 years ago but which was so acid that no vegetation would grow. Heavy liming enabled various crops to be grown. It was noticeable that the roots spread only in the upper few inches of limed soil, failing to enter or turning aside horizontally on reaching the lower unlimed layers. Weeds were absent on the unlimed areas but sprang up in abundance after liming. Even these had very shallow roots.—*Ernst A. Bessey.*

6105. HARRISON, F. C., D. H. JONES, AND A. G. LOCHHEAD. Seed inoculation and its limitations. *Sci. Agric.* 5: 288. 1925.—The authors briefly outline the function of bacteria in the soil and warn growers not to expect success from the use of cultures claimed to be of benefit for miscellaneous non-leguminous crops.—*T. G. Major.*

6106. HOAGLAND, D. R. The soil solution in relation to the plant. *Faraday Soc. Trans.* 17: 249-254. 1922.

6107. JAACHIM, A. W. R. The leaching of fertilizers from soils. *Jour. Bd. Agric. British Guiana* 18: 171-180. 1925.—This is a popular review.—*J. P. Jones.*

6108. JONES, H. TREFOR. Soil studies on the waste lands of Llyn. *Welsh Jour. Agric.* 1: 142-147. 1925.

6109. KOLLMANN, OTTMAR. Handelsdüngerrecht. Vorschriften über den Verkehr mit Handelsdünger, die Kaliwirtschaft und die Schwefelsäurewirtschaft mit Erläuterungen, nebst einer Übersicht über die Handelsdüngewirtschaft. [Commercial fertilizers.] viii+352 p. P. Parey: Berlin, 1922.

6110. KUYPER, J. De waarde van de verschillende stikstofmeststoffen voor de suiker cultuur op Java. [Value of diverse nitrogen fertilizers for the sugar cane culture in Java.] Mededeel. Proefsta. Java-Suikerindust. 3. 145-154. 6 fig. 1922.—Discussion of fertilizing experiments during 1916-1921 and of the results obtained, with their bearing upon conclusions reached from experiments conducted previous to this period.—*Peter A. Klapthoak.*

6111. KVAPIL, KAREL, UND ANTONIN NEMEC. Beitrag zur Frage des Einflusses reiner Fichten- und Buchenbestände sowie durch beide Holzarten gebildeter Mischbestände auf einige Eigenschaften der Waldböden. [Contribution to the question of the effect of pure spruce and beech stands, also of mixed stands of these species, upon various characteristics of forest soils.] Zeitschr. Forst.- u. Jagdw. 57: 193-231. 2 pl. 1925.—The pure beech stand throughout exerts a very favorable influence on the general condition of the forest soil, which is due in part to the favorable form and composition of beech litter; and is reflected in the more desirable physical and biochemical condition of beech soils. On the other hand, the closed spruce stand does not begin to exert the favorable influences characteristic of the closed beech stands. The mixed hardwood-coniferous forest has a more favorable effect upon the general condition of the soil, and especially upon those factors, which find expression through the progress of biochemical processes. The favorable effect of the mixed forest is due to the more open character of the duff and to more intensive illumination of the forest floor.—*J. Roesser, Jr.*

6112. LANDER, P. E., AND BARKAT ALI. Nitrogen fixation in the Punjab. Memoirs. Dept. Agric. India, Bact. Series 2. 1-28. 1925.—These trials were carried out in the laboratory with a view to finding out the factors regulating N fixation and the subsequent losses. For estimating the N-fixating power of the soil, Ashby's solution method employing emulsion of soil equivalent to 1 gm. for inoculation was used. It was found that N fixation was very rapid at 30-40°C. It is shown that the effect of high salt content such as in the case of alkali soils is to retard the activities of the N fixing bacteria and not necessarily to destroy them permanently. From the experiments on N fixation in diffused light (laboratory) as opposed to darkness (incubator) the authors feel it logical to conclude that the diffused light has no unfavorable effect on the N fixing organisms. The authors find that normal soils possess the power of rapidly fixing large quantities of N without the addition of any carbohydrate, light soils possess greater power of N fixation than heavy soils and more denitrification occurs in the latter than in the former. It is also observed that only when the soil has been exposed to climatic conditions for several months after the removal of the wheat crop does it become suitable for N fixation.—*D. V. Bal.*

6113. LEININGEN. [Rev. of: PUCHNER, HEINRICH. Bodenkunde für Landwirte. (Soil science for farmers.) 710 p. 5 pl., 212 fig. Ferdinand Enke: Stuttgart, 1923.] Centralbl. Gesam. Forstw. 50: 360-362. 1924.

6114. LEONARD, LEWIS T. Lack of nodule formation in a sub-family of the Leguminosae. Soil Sci. 20: 165-167. 1925.—A short discussion of the absence of nodule formation in certain species of Leguminosae belonging to the subfamily Caesalpinaceae.—*P. L. G. (Contrib. by Absts. Bact.)*

6115. LEWCOCK, H. K. On the stimulating effect of phosphatic fertilizers on azofication in South Australian soils. Australian Jour. Exp. Biol. & Med. Sci. 2: 127-133. 1 fig. 1925.—In spite of the comparatively low N content of South Australian soils, the bare fallow-wheat rotations without leguminous crops, and the fact that no nitrogenous manures are added, there seems to be no deficiency of this element although large crops are continually removed. The possible stimulatory effect of the general local practice of manuring with superphosphate on the activity of the abundant Azotobacter flora of the soils was investigated. The amount of N fixed in a liquid medium of known phosphate concentration, and containing a measured quantity of sterilized soil, was taken to be an index of the stimulating effect of added phosphates on the Azotobacter flora of such soil, the organism used for inoculation being the same throughout. Added phosphate in all cases had a marked stimulating effect on N fixation, and variations in the amount of stimulation are discussed in relation to the history and type of soil in the 6 cases studied.—*Geoffrey Samuel.*

6116. LIPMAN, C. B., AND J. K. TAYLOR. Bacteriological Studies on Rose Islet soils.

Carnegie Inst. Washington Publ. 340: 209-217. 1924.—The results of bacteriological studies on 4 samples of soils 0"-7" and the corresponding subsoils 6"-12", collected on Rose Islet, Samoa, in 1922, are reported as supplementary to chemical studies described heretofore. These soils, being the result of the decomposition of lithothamnium rock under insular conditions, afford interesting and important data on the distribution and development of a soil flora. The samples were collected from 4 locations ranging from a spot 50 feet from the beach and 50 feet from any visible plant growth to the center of the forest of "*Pisonia grandis*." The following results were obtained: (1) Bacterial counts on peptone agar ranged from 14,000 per gm. of sand near the beach to 1,700,000 per gm. in the forest; this is correlated with the accumulation of organic matter; (2) 26 distinct types of colonies were recognized, 20 of these being Actinomycetes, 5 bacterial forms and 1 a mold; (3) all samples produced nitrification; the forest soils, richer in organic matter, proved most vigorous, a result which the authors associated with the CO₂ supply; (4) growth in mannite solution as used for N fixation, resembled *Azotobacter* superficially. No further tests being conducted, it was impossible to report definite conclusions.—In general these studies are indicative of possibilities which cannot be obtained under normal conditions. The presence of the nitrifying organisms and predominance of the Actinomycetes is deemed to be of significance and importance, and warrants further investigation.—*L. J. H. Teakle.*

6117. LIPMAN, J. G. The fixation of nitrogen under field conditions. Jour. Amer. Soc. Agron. 17: 450-456. 1925.—The author presents figures to show that with the proper use of legumes in the rotation the nitrogen content of the soil can be maintained. Under systems of cropping where legumes are not grown or are removed, the nitrogen loss in the soil may come to a very considerable amount. He emphasizes the necessity for the improvement of farm practices and also for a further study of this problem by the soil scientist.—*I. L. B. (Contrib. by Absts. Bact.)*

6118. LIPMAN, J. G., and AUGUSTINE W. BLAIR. Report of the department of soil chemistry and bacteriology. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 247-262. 1924 [1925].—Results of a series of plots are presented where wheat and rye have been grown continuously with and without a legume since 1909. The average percentage of N for the 14-year period where rye alone was planted was 1.756 for the grain and 0.372 for the straw as compared with 1.842 and 0.418 for the grain and straw, respectively, for rye followed by soy beans. Wheat alone showed an average of 2.064% for the grain and 0.480 for the straw. Where wheat was followed by soy beans the percentage of N was 2.137 and 0.509.—In a similar experiment with corn the average yield of shelled corn in 1923 for the legume section was 8 bushels greater than for the non-legume section. The yield of stalks was practically the same. The average percentage of N in the grains and stalks of the legume section was 1.57 and 0.863; and of the non-legume section, 1.34 and 0.591. The yield of grain on the legume section was nearly as great as where 2 tons of manure were applied.—In a potato fertilizer test conducted over a 7-year period highest average yield resulted from an application of 2800 pounds of a 4-8-3 fertilizer. In a comparison of nitrogenous materials the average yields following the use of NaNO₃, fish and tankage were approximately the same while (NH₄)₂SO₄ gave an average decrease of approximately 30 bushels as compared with the other materials. The tubers on these plots were much freer from scab, however, than those on the nitrate of soda plots. A combination of $\frac{1}{2}$ NaNO₃ and $\frac{1}{2}$ of one of the other nitrogenous materials gave better yield returns than any one of the N sources alone. The results of K studies indicate that, for this soil type, 6% K is sufficient when the application is 1600 pounds per acre. Green sand marl used at the rate of 5000 pounds per acre gave a fair yield increase. Lime alone gave a smaller yield than the check plots; when used with a 4-8-0, the yield was less than where the latter mixture was used alone.—Despite the fact that no commercial N or manure has been applied to plots on which beans have been grown for more than 10 years the N content of the soil is nearly as great as that of adjoining plots planted in a non-legume plot but which receives 320 pounds of NaNO₃ annually. One of the plots in this experiment which had not been limed for 11 years received 4000 pounds of ground oyster shell per acre. The total N recovery from this plot was nearly 50 pounds per acre as compared with 18 pounds the previous year.—*Wm. H. Martin.*

6119. LIPMAN, J. G., AND H. C. McLEAN. Influence of sulfur alone and in combination with rock phosphate on plant growth. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 263-274. 1924 [1925].—Mixtures of sulphur and rock phosphate were used in fertilizer experiments on Elsinboro fine sand, Colts Neck loam and Sassafras loam soils, comparing this mixture with acid phosphate as a source of P, depending on the oxidation of the S to solubilize the P from rock. No increase in yield was apparent with the sulphur rock mixture. The stimulating or fertilizer effects of small applications of S on the yield of barley, buckwheat, mustard, soybeans, radishes, millet, and rape on limed and unlimed soils were also tested. On an acid Sassafras loam soil the application of 10, 25, 50 and 100 pounds of S per acre materially decreased the yield of barley, buckwheat, and mustard. The acidity of the soil was increased but slightly. On a less acid Sassafras soil, S applications increased the yield of rape, soybeans, barley and a residual crop of radishes. In some cases the yield of radishes was increased 66%. The nodules on the soybeans where S was applied were much larger. No increase in crop yields except in the case of radishes were noted on a Penn loam soil to which S was applied.—H. C. McLean.

6120. LYON, T. LYTTLETON, AND HARRY O. BUCKMAN. The nature and properties of soils: a college text of edaphology. v + 588 p. Macmillan Co.: New York & London, 1923.

6121. McCool, M. M. Peat and muck soils. Michigan Agric. Exp. Sta. Quart. Bull. 3: 126-127. 1921.

6122. McCool, M. M. Sandy soils of Northern Michigan. Michigan Agric. Exp. Sta. Quart. Bull. 6: 64-66. 1 fig. 1923.

6123. McCool, M. M. Soil improvement for quality of products. Michigan Agric. Exp. Sta. Quart. Bull. 5: 160-161. 1923.—Wheat and rye grown on fertilized fields gave better grades of grain, as well as increased yields over the same crops grown without the addition of fertilizers.—Ernst A. Bessey.

6124. McCool, M. M., AND G. M. GRANTHAM. Lime and fertilizer tests. Michigan Agric. Exp. Sta. Quart. Bull. 4: 80-85. 2 fig. 1922.

6125. McCool, M. M., AND G. M. GRANTHAM. Soil management for fall seeded grains. Michigan Agric. Exp. Sta. Quart. Bull. 5: 5-6. 2 fig. 1922.

6126. McCool, M. M., AND PAUL M. HARMER. Some results from fertilizers on muck soils. Michigan Agric. Exp. Sta. Quart. Bull. 4: 45-51. 4 fig. 1921.

6127. McCool, M. M., AND J. O. VEATCH. Two important Northern Michigan soil types. Michigan Agric. Exp. Sta. Quart. Bull. 6: 33-35. 1 fig. 1923.

6128. McCool, M. M., G. M. GRANTHAM, AND C. W. SIMPSON. Fall crop fertilizers. Michigan Agric. Exp. Sta. Quart. Bull. 4: 3-5. 1 fig. 1921.

6129. McLaughlin, W. W. The capillary distribution of moisture in soil columns of small cross section. U. S. Dept. Agric. Dept. Bull. 1221. 1-23. 7 fig. 1924.

6130. MARTIN, F. J., AND R. E. MASSEY. Nitrification in Sudan soils. Wellcome Trop. Lab. Chem. Sect. Bull. 29. Khartum, 1923.—Soil samples kept in the laboratory increased in nitrate content 30% in 4 months, but in the fields from which the samples were taken the increase was much greater. Where fallow was irrigated, nitrates accumulated on the ridges, but disappeared in dry fallow. The greater amount of nitrate on the ridges did not seem to be due to evaporation, as other salts were not thus concentrated there. Yields of wheat were greater where the initial nitrate content was greatest. The plant requires the greatest amount of nitrate about 6 weeks after sowing. Ammonium sulphate applied at this time gave the best results. When applied to cotton at planting time this manure gave no increase in crop, while 1 cwt. applied 2 months later gave an increase of 14-18%. It was found that nitrates accumulated in the soil during the growth of the cotton plant. It was suggested that this was due to concentration on the ridges where it was not available to the plants. Flooding the ridges so as to wash the nitrates into the soil, was tried with success.—W. Carlton McQuiston.

6131. MARTIN, T. L. Effect of straw on accumulation of nitrates and crop growth. Soil Sci. 20: 159-164. 1925.—Straw was found to be detrimental to nitrate accumulation and to crop growth, the depression being more or less proportional to the quantity of straw added. If the straw is given time to decompose (12 months with smaller applications) no harmful effect is evident.—P. L. G. (Contrib. by Absts. Bact.)

6132. MATTHEL, ADOLFO. Fertilizantes calcareos. [Calcareous fertilizers.] 111 p. Imprenta Universitaria: Santiago de Chile, 1925.

6133. MAYER, ADOLF. Neue Ziele der Agrikulturchemie. [New goals of agricultural chemistry.] *Naturwissenschaften* 13: 238-240. 1925.—A discussion of the recent work on the relation between the soil reaction (physiologically acid, neutral, or alkaline) and plant growth as well as of the need of further studies on the problem.—*Orton L. Clark*.

6134. MEGGITT, A. A. Studies of an acid soil in Assam, II. Mem. Dept. Agric. India. Chem. Ser. 7²: 1923.

6135. MOSIER, J. G., Ed. by EUGENE DAVENPORT. Soils and crops. 412 p. 178 fig. Rand McNally and Co.: New York and Chicago, 1923.—A text for public schools.

6136. MOSSÉRI, VICTOR M. Du sol égyptien sous le régime de l'arrosage par inondation. [The soil of Egypt under the system of irrigation by inundation.] Bull. Inst. Egypt. 5: 21-61. 1923.—The author denies that the high fertility of the Egyptian soils is due entirely to the fertilizing value of the waters and sediments of the Nile. That period of fallow known as "charaqi" and the cracking of the soil which results has a marked influence on the physical, chemical and biological composition of the soil. The fallow period improves the porosity of the soil and its capacity for air and water, and a mellow condition is produced more effectively than by the plow. The cracks produced in the soil during fallow permit deep aeration and oxidation, by which the most favorable condition of the soil is restored. Aeration also prevents the formation of injurious quantities of Na_2CO_3 and renders the mineral constituents of the soil more available for plants. The biological effects of the fallow under the climate of Egypt are to partially sterilize the soil, decreasing not only the protozoa but also bacteria injurious to cultivated plants. A rotation of crops, including winter cereals, legumes, corn and cotton, is recommended. To prolong as much as possible the period of fallow it will be necessary to utilize the more prolific varieties to make up for the reduction of the area planted.—*From the author's abstract (transl.)*.

6137. MOSSÉRI, VICTOR M. Le sébakh des koms ou sébakh koufri. [The "koms" or "koufri" fertilizer.] Bull. Inst. Egypt. 3: 75-92. 1921.—The "sébakh des koms" or "koufri" consists of the pulverized material recovered from the "koms" or rubbish heaps on the sites of ancient villages. The author discusses the composition of this material and its value as a fertilizer or soil amendment.—*From the author's abstract (transl.)*.

6138. MOSSÉRI, VICTOR M. Note sur l'assainissement des terres de la Basse-Egypte. [The sanitation of the soils of Lower Egypt.] Bull. Inst. Egypt 2: 97-103. 1920.—The depth to the water table is an important consideration in all irrigation projects in Egypt. The author states that this level is determined by the depth to which it is necessary to drain the land to permit the most favorable development of crops, particularly cotton. A depth to the water table ranging from $1\frac{1}{2}$ to 2 m. is recommended for different parts of Lower Egypt.—*From the author's abstract (transl.)*.

6139. MOSSÉRI, VICTOR M. Note sur les dépôts nilotiques des gazayer et des saouahel d'Égypte. [The Nile sediments on the gazayer and saouahel of Egypt.] Bull. Inst. Egypt. 1: 151-180. 1919.—The gazayer include not only the islands in the Nile but also the alluvial flats bordering the river. The "saouahel" are the more elevated areas. The author discusses the physical and chemical characteristics of the soils on these lowlands and gives the results of a comparison of the physical properties of the newly deposited alluvium with those of ancient deposits.—*From the author's abstract (transl.)*.

6140. MOSSÉRI, VICTOR M. Note sur l'influence des sebakhs des koms ou koufri, du marog et la tafla sur les propriétés physiques du sol. [The effect of the fertilizer of the "koms," or "koufri," "marog" and "tafla" on the physical properties of the soil.] Bull. Inst. Egypt. 5: 85-113. 1923.—The author discusses the low grade materials used as fertilizers in Egypt. He finds that the principal effect of these materials is on the physical properties of the soil as soil amendments, but that their composition is so variable that they should not be used without careful investigation.—*From the author's abstract (transl.)*.

6141. MOSSÉRI, VICTOR M. Note sur l'influence du koufri, du marog et la tafla sur les phénomènes biologiques du sol. [The influence of "koufri" "marog" and "tafla" on the biological condition of the soil.] Bull. Inst. Egypt. 5: 219-235. 1923.—The author investi-

gated the extent to which nitrification takes place in the "Koufri" (fertilizers from ancient rubbish heaps) when these materials are used as fertilizers or soil amendments on Egyptian soils. It was found that under favorable conditions 10-25% of the nitrogenous organic material underwent nitrification.—*From the author's abstract (transl.)*.

6142. MOSSÉRI, VICTOR M. Quelques remarques sur la note de M. Prescott relative à la volatilisation de l'ammoniaque du sulfate d'ammoniaque et la réaction du sol. [Some remarks on the article of Prescott relative to the volatilization of the ammonia of sulphate of ammonia and the reaction of the soil.] Bull. Inst. Egypt. 5: 209-218. 1923.—The author discusses an article by Prescott on the effect of $(\text{NH}_4)_2\text{SO}_4$ on corn applied as a top dressing and reviews the principles which govern its use. The loss of ammonia from the $(\text{NH}_4)_2\text{SO}_4$ by volatilization during the process of nitrification in the soil was studied in Egypt by Naus and Delamarre in 1903, and it was found that the losses were not great except where the soil was poor in humus and rich in lime, but in no case exceeded 0.082% of the N of the sulphate. This loss (Prescott) is found to be quite high in alkaline soils, in places exceeding 47%. The practical result of the work of Prescott and the author has been to show that $(\text{NH}_4)_2\text{SO}_4$ should be applied in pockets at the roots of the plants immediately before irrigation.—*From the author's abstract (transl.)*.

6143. MOSSÉRI, VICTOR M. Sur la valeur de l'azote organique des "koufri," des "marog" et des "tafia." [The value of the organic nitrogen of "koufri," "marog" and "tafia."] Bull. Inst. Egypt. 6: 1-8. 1924.—This gives the results of investigations to determine the availability of the N in certain low grade materials used as fertilizers in Egypt. The results obtained show that a certain amount of the organic N is converted into nitrate under favorable conditions.—*From the author's abstract (transl.)*.

6144. MOSSÉRI, VICTOR M., ET CH. AUDEBEAU BEY. Du rôle des crevasses du sol dans le dessalement et l'assainissement permanents des terres d'Égypte. [The rôle of soil crevices in the removal of salts and the permanent sanitation of the soils of Egypt.] Bull. Inst. Egypt 5: 9-19. 1923.—The cracks which appear in the soils of Egypt during the fallow period play a very important rôle not only in maintaining the fertility of the soil under irrigation by inundation but also in lowering the salt content. The capillary soil waters of the low lands or basins are evaporated on the faces of these crevices and the salt is left behind. When the basins are refilled the salt is dissolved and carried away to the Nile.—*From the author's abstract (transl.)*.

6145. MURPHY, HENRY F. Nitrate studies on a manured and unmanured soil under continuous wheat culture. Jour. Amer. Soc. Agron. 17: 734-741. 1925.—Manured soil was superior to unmanured soil under all conditions studied. A gain was shown in nitrification, moisture retention and plant growth. The amount of NO_3 present in the soil is rapidly reduced as soon as spring growth of the wheat begins.—*F. M. Schertz*.

6146. MURRAY, J. A. The science of soils and manures. 3rd ed. 298 p. Constable: London, 1925.

6147. NAGANT, H. M. Problèmes actuels en matière d'engrais phosphates. [Present day problems in composition of phosphatic fertilizers.] Sci. Agric. 5: 357-360. 1925.—The writer compares a number of phosphatic fertilizers with the true Thomas phosphate in their reactions to the Wagner citric acid solubility method. He concludes that under the conditions obtaining in Quebec the preference must be given to the latter.—*T. G. Major*.

6148. NAGANT, H. M. Une visite aux mines de potasse d'Alsace. [A trip through the Alsatian potash mines.] Sci. Agric. 5: 229-233. 1925.—The writer briefly describes the potash mines in the vicinity of Mulhouse, Alsace, mentioning particularly their area and geological origin, exploitation under German and French rule, plan, composition of the salt (sylvinite), method of extraction of the potash, commercial and technical organization, commercial products, and a comparison of the Alsatian and German products.—*T. G. Major*.

6149. NEMEC, ANTONIN, UND KAREL KVAPIL. Studien über einige physikalische Eigenschaften der Waldböden und ihre Beziehung zur Bodenazidität. [Studies involving various physical qualities of forest soils and their relation to soil acidity.] Zeitschr. Forst.-u. Jagdw. 57: 540-567. 1925.—A review of the significance of physical soil qualities in their relation to forest soil condition in the light of past experiments, also of studies on the effect of air capacity

upon the reaction of forest soils. From their own experiments, which are described, the authors conclude that of all physical qualities absolute air capacity is most vital in its effect upon growth of forest stands, and that this factor may be regarded as an important indicator of the influence of growth of forest stands as affected by various silvicultural measures upon the composition and condition of the soil.—*J. Roeser, Jr.*

6150. NEUBAUER, H. Methoden zur Bestimmung der Zusammensetzung der Nahrungsmittel der Pflanzen (Analyse der Düngemittel). [Methods for determining the composition of fertilizers (Analysis of fertilizer).] Handbuch der biologischen Arbeitsmethoden 175. P. 467-612. Urban & Schwarzenberg: Berlin, 1925.—A full discussion of the principles and methods underlying the making of fertilizer analyses. Considerable detail is given to practically all of the various organic and inorganic fertilizers in use. Laboratory equipment and methods are also described.—*W. B. Lydenberg.*

6151. NICOLAISEN, N. Die Phosphorsäure im Gemüsebau. [Phosphoric acid in vegetable growing.] Gartenwelt 29: 91-92. 1925.—Application of phosphorus for vegetables has an influence upon yield and improves the keeping qualities.—*J. C. Th. Uphof.*

6152. NIKLAS, H., UND W. HERSCHBERGER. Eine neue methode zur raschen Ermittlung der Phosphorsäurebedürftigkeit unserer Böden. [A new method for the quick determination of the phosphoric acid deficiency of our soils.] Illus. Landw. Zeitg. 44: 379-380. 1924.—An explanation, application, and test of Christensen's method for determining the deficiency of phosphoric acid by the growth of *Azotobacter chroococcum* in a medium containing a sample of the soil to be tested.—*John W. Roberts.*

6153. NIKLAS, H., UND A. HOCK. Ein allgemeiner Indikator als wesentlicher Fortschritt bei der Reaktionsbestimmung der Böden. [A universal indicator constituting an important advance in the technique of the determination of soil reaction.] Illus. Landw. Zeitg. 44: 561-562. 1924.—For the determination of the H-ion concentration of soils through colorimetric methods, a single indicator consisting of bromphenol blue, bromeresol purple, methyl red and bromthymol blue mixed together in the proportions 4: 1: 6: 4, respectively, is recommended. These dyes are dissolved in alcohol, the concentration being 0.04% for all except the methyl red which should be 0.02%. As buffer solutions the citrate mixtures having pH values of 3.5-5.0 and the phosphate mixtures having pH values of 5.0-7.6, are recommended.—*John W. Roberts.*

6154. NOLTE, O. Beiträge zur physiologischen Reaktion von Düngelsalzen. [Physiological reaction of fertilizer salts.] Mitteil. Deutsch. Landw. Ges. 39: 729-731. 1925.—Experiments made by Mitscherlich with oats in a sand culture with physiologically neutral salts do not give the results that might be expected. A graph presents the results of the application of NH_4NO_3 alone and in combination with varying amounts of K_2SO_4 . An increase in the application of NH_4NO_3 gives lower yields but the losses are reduced when larger quantities of K_2SO_4 are added. The interesting fact brought out is that the decrease in yields is not due to the acid or alkali residue in the soil but to an overbalancing of the plant with growth material, and that the loss in yields may be reduced by the introduction of another substance. Only this will explain why a superphosphate added to $(\text{NH}_4)_2\text{SO}_4$ on sour soils will increase the yields. A treatment of acid soils by Schulte in a series of experiments (1855-1895) is described. An application of marl at first resulted in larger yields but later the returns from the land decreased. The treatment was then reversed and physiologically acid salts such as kainit and carnallit were applied. The result was an increase in yields and a general improvement in the condition of the soil. This article ends with a discussion of the use of several kinds of potash salts in Germany and their relative costs. Kainit is favored for most crops in spite of its tendency to form a hardpan in the soil.—*T. D. Rice.*

6155. NORRIS, ROLAND V. Note on the permanent manurial plots, Coimbatore. Mem. Dept. Agric. India. Chem. Ser. 6⁸: 1923.

6156. NORRIS, ROLAND V., B. VISWANATH, AND C. V. RAMASWANI AYYAR. A preliminary note on the decomposition of calcium cyanamide in South Indian soils. Mem. Dept. Agric. India Chem. Ser. 7³: 1923.

6157. PAÑGANIBAN, E. H. A preliminary study of the effect of pressure upon the nitrogen changes in the soil. Philippine Agric. 14: 235-242. 1925.—A pressure of 15 pounds per square inch had no measurable effect.—*S. F. Trelease.*

6158. PENG, CHIA YUAN. [A study of Peking alkali soil.] Ko-Hsueh [Science-Publ. Chinese Sci. Soc.] 10: 1514-1525. 1925.—The writer has made a chemical and physical analysis of alkali soil in the vicinity of Peking. It is found that the surface soil contains more alkaline salts than the subsoil. The alkaline salts in the soil consist mostly of NaCl and Na₂SO₄. A study is also made of ammonification, nitrification, sulphofication, and phosphofication in this soil. A brief review of early investigations on the subject is given.—*Chunjen C. Chen.*

6159. PJETSCHKA, FERD. Die Mikroorganismen im Waldböden. [Microorganisms in forest soils.] Wiener. Allg. Forst- u. Jagdzeitg. 43: 297-299. 1925.—This article reports no original researches, but summarizes the generally well-known facts of distribution of microorganisms in forest soils, with special reference to the nitrification processes. In general the humus and litter of the forest soil are unfavorable for most forms of bacteria. The rate of nitrification is generally low, but rises when the forest is cut over and also when grass and similar growths enter the forest.—*F. S. Baker.*

6160. PRESCOTT, J. A. Farmyard manure in Egypt. Sultanic Agric. Soc. Bull. 8. 1-24. 1921.—In Egypt as in most Eastern countries the solid excreta from animals is dried and used for fuel. The liquid excrement however is carefully saved. The common practice is to bring in soil from the fields, or sediment from the canals and to spread it on the floor under the animals daily, as needed for an absorbant. The N in such manures is 30-70% available. The value of the manure seems to be directly proportional to the amount of available N. It is recommended that farmers place the manure in large compact heaps, to avoid ammonia losses caused by too little moisture, and to prevent denitrification which accompanies an excess of water. A method is described for determining the amount of available N in manures.—*W. C. McQuiston.*

6161. PRESCOTT, J. A. Some aspects of bacteriological activity in Egyptian soils. Sultanic Agric. Soc. Bull. 2. 1-47. 1920.—The purpose of the study was to determine the intensity of the bacteriological activity in the soil. The fluctuation of the N content of the soil was taken as the principal index of this activity. Moisture seemed in all cases to be the limiting factor. In the cotton fields there seemed to be an accumulation of nitrates, indicating that they are produced faster than they are used. This is in line with the common practical experience of the farmers of Egypt, that nitrates are not needed for cotton. Wheat and maize used up the nitrates as fast as formed. If there is enough rain, winter fallow shows considerable nitrification, while summer fallow with its hot, dry soil shows very little activity. During the Nile flood, nitrification ceases in the basin lands, and ammonia is produced. As soon as the water is drained off nitrification is resumed. Experiments with maize indicate that when the plants are grown on ridges, the nitrates accumulate at the tops of the ridges, where they are not available for the roots. This can be avoided by planting on the flat. Experiments show a difference of about 5.5 bushels in favor of maize so planted, over that planted on ridges.—*W. C. McQuiston.*

6162. PRICE, O. B. Fertilizers affect quality of alfalfa. Michigan Agric. Exp. Sta. Quart. Bull. 5: 158-159. 1923.—Not only do commercial fertilizers increase yield but also amount of mineral salts in alfalfa hay. In certain light, sandy, acid soils of Manistee County, the application of limestone and acid phosphate increased the yield of hay for the first cutting over 50%, while Ca in the hay was increased 5-fold and P nearly 4-fold. For the 2nd cutting the increase in hay was about 90%, the Ca less than 10% and P about 20%. For the 2nd cutting the check plots showed great increase in amount of Ca and P as compared with the 1st cutting.—*Ernst A. Bessey.*

6163. PRICE, O. B. Sugar beet fertilization. Michigan Agric. Exp. Sta. Quart. Bull. 6: 91-93. 1 fig. 1924.

6164. RAMASWAMI SIVAN, RAO SAHIB M. R. The phosphatic nodules of Trichinopoly and the availability of flour phosphate as a manure for paddy. Mem. Dept. Agric. India. Chem. Ser. 77: 1924.

6165. RIVIÈRE, G., ET G. PICHARD. La stérilisation partielle du sol. [Partial soil sterilization.] Prog. Agric. et Vitic. 77: 285-286. 1922.—The addition of sodium arsenate to soil at the rate of 20-75 kg. per ha. is believed to reduce the number of protozoa in the soil and to change the relationships between soil organisms. There is a consequent increase in yield

of wheat, oats and potatoes (crops tested); 100 kg. per ha. proved toxic to wheat.—*E. L. Proebsting*.

6166. RUSSEL, J. C., AND H. E. WEAKLEY. The movement of soil moisture in the vapor phase. *Jour. Amer. Soc. Agron.* 17: 642-643. 1925.—The main cause of vapor movement was ascribed to the inequality of aqueous saturation between soil air and external atmosphere.—*F. M. Schertz*.

6167. RUSSEL, J. C., E. G. JONES, AND G. M. BAHRT. The temperature and moisture factors in nitrate production. *Soil Sci.* 19: 381-398. 1925.—Nitrification was found to be very slow at 5°C. and as the temperature was raised nitrate production increased rapidly to a maximum at 35°C. Above 35°C. the rate decreased and ceased at 55°C. Nitrate formation was insignificant at a moisture content as low as the hygroscopic coefficient of the soil, but increased as the moisture content increased up to the highest degree studied, $1\frac{1}{2}$ the moisture equivalent of the soil, or less than $\frac{1}{2}$ saturated in the case of both soils studied.—*P. L. G. (Contrib. by Absts. Bact.)*.

6168. SAGER, J. L. Soil acidity investigations conducted in Switzerland and Devon. *Rept. British Assoc. Adv. Sci.* 1924: 446. 1925.—Determinations of pH of soil filtrates by the colorimeter method in the Grand St. Bernard Region at an altitude of 1100-2700 m. and in South Devon at an altitude of 200 feet, show that a definite correlation exists between intensity of light and soil acidity. In passing from a dense to a lesser shade and into the open we pass successively through soils of less and less acidity. Where the light is intense low pH values are rare. The results of pH determinations under forests of different trees with their varying shade conditions are given.—*T. D. Rice*.

6169. SAHASREBUDDHE, AND J. A. DAJI. Nitrogen recuperation in the soils of the Bombay Deccan. Part I. *Mem. Dept. Agric. India, Chem. Sci.* 15: 460-465. 1925.

6170. SCOTT, P. RANKIN. Artificial fertilizers. *Jour. Dept. Agric. Victoria* 23: 39-50. 1925.

6171. SCOTT, P. RANKIN, AND WILL C. ROBERTSON. Fertilizers and the fertilizer industry. *Jour. Dept. Agric. Victoria* 22: 679-687, 10 fig.; 705-715, 8 fig.; 1924; 23: 13-22, 6 fig.; 65-73, 5 fig.; 147-157, 7 fig., 1 map; 239-248, 8 fig.; 290-295, 4 fig. 1925.—The history, origin, composition, value and manufacture of animal fertilizers, superphosphates and rock fertilizers, are described.—*Wm. E. Lawrence*.

6172. SHANTZ, H. L. Soil moisture in relation to the growth of crop plants. *Jour. Amer. Soc. Agron.* 17: 705-711. 1925.

6173. SHREVE, FORREST. Influence of moisture on soil temperature. *Carnegie Inst. Washington [D. C.] Year Book* 24: 162-163. 1925.

6174. SIMPSON, C. W. The liming of soils. *Michigan Agric. Exp. Sta. Quart. Bull.* 3: 124-125. 1 fig. 1921.

6175. SKEEN, JOHN ROBSIN. Greensand as a source of potassium for green plants. *Amer. Jour. Botany* 12: 607-616. 4 fig. 1925.—Wheat plants were grown in cultures with amounts of greensand varying from $\frac{1}{2}$ to 4%, and in controls lacking greensand but both with and without KNO₃. Greensand was found to be an available source of K, the percentage absorbed increasing sharply up to about 2% of greensand and then falling away sharply as more greensand was added. When an excess is added, the K remains unused in the soil but available to plants for some time. The average K-short soil should show marked improvement for several years from an addition of 5-15 tons of greensand per acre. In using greensands, it is best to have considerable Ca present either in the soil or composted with the greensand in order to obviate any toxic effect that may be brought about by a low pH value.—*E. W. Sinnott*.

6176. SKINNER, J. J., AND W. F. PATE. The influence of potash on cotton bolls and foliage on a potash deficient soil. *Jour. Amer. Soc. Agron.* 17: 550-556. 1925.—Wanamaker's Cleveland cotton and Mexican Big Boll were grown on Wickham fine sandy loam. Phosphate had very little effect upon yield but did affect the maturing of the cotton. Nitrogen produced a vigorous plant capable of producing an abundance of fruit. Potash is a prime factor in the metabolism of the plant in rust prevention, boll formation and maturation. Potash was very striking in its effect on cotton in this soil and its influence is more pronounced than on most soils of the cotton belt.—*F. M. Schertz*.

6177. SNOW, LAETITIA M. Bacteria of Arroyo soil, Tucson, Arizona: A summary of results. Carnegie Inst. Washington [D. C.] Year Book 24: 161. 1925.

6178. SNYDER, R. M. Inoculation of legumes. Michigan Agric. Exp. Sta. Bull. 3. 101-102. 1921.

6179. SPRINGER, G. Aufforstungsmöglichkeit von Hochmooren in Deutschland und Schweden. [The possibility of afforesting high moors in Germany and Sweden.] Zeitschr. Forst.- u. Jagdw. 57: 105-113. 1925.—Afforestation of high moors has met with failure in Germany and success in Sweden, although the climatic conditions to be combated in the latter country are much more severe. The Swedish soils are newer, more compact, and richer in the neutralizing mineral elements than the German soils which are impoverished. In general, the young trees in Sweden are not threatened with destruction through drying out, the capillary ground water supplies the missing and essential mineral elements, and the firm structure of the soil gives the roots a foothold without preventing their pushing into the mineral soil. Afforestation constitutes the best use of the high moor areas in Sweden, but in Germany they have too great an economic value to be considered for anything but agricultural use.—J. Roeser, Jr.

6180. SPURWAY, C. H. Testing soils for acidity. Michigan Agric. Exp. Sta. Quart. Bull. 6: 93-97. 1 fig. 1924.—A description of the "Soiltex" outfit for measuring soil reaction, with discussion of use and application.—Ernst A. Bessey.

6181. SSEWERTZOFF, L. B. The effect of some antiseptics on soil amoebae in partially sterilized soils. Centralbl. Bakt. [etc.] II Abt. 65: 278-291. 1925.—A detailed study has been made of the influence of various doses of a number of antiseptics upon mixtures of pure cultures of amoebae and bacteria in solution culture and in sterile soil. It was found that smaller doses of the antiseptics are required to kill the organisms in solution than in soil. The actual concentration of the antiseptics required to destroy amoebae in the soil is so large as to become unapplicable for purposes of partial sterilization, which has as its aim the destruction of the protozoa. Even 60% CS₂ did not kill the cysts of amoebae in the soil; the same was true of 15% ether, 6% chloroform, 25% CaO, 30 parts per thousand of chlorine water, less than 15% toluol and 5 % CaS. Bacterial spores were found to be more resistant to the antiseptic than the cysts of amoebae. Active amoebae have a lower resistance than non-spore-forming bacteria, but the latter are more readily destroyed than cysts of amoebae. The data did not justify any claim for an equilibrium between the numbers of amoebae and bacteria in the soil, the fluctuations of the numbers of amoebae and bacteria being due more to the successive drying and moistening of the test soil than to the action of amoebae on the bacteria.—The author concludes that the hypothesis of Russel and Hutchinson, that the increased productiveness of the soil as a result of partial sterilization is due to the destruction of the soil protozoa, is not correct. The author agrees with Hiltner and Störmer, Fred, Gainey and others that the increased crop growth as a result of partial sterilization is due to the direct stimulus of the bacteria and the crop by the antiseptic.—S. A. W. (Contrib. by Absts. Bact.)

6182. STAIB, FRANZ. Vertikale Untergrund-Kultur mit Romperit. [Vertical subsoil-culture with Romperit.] Möllers Deutsch. Gärtner Zeitg. 40: 377-378, 405-406. 1 fig. 1925.—For centuries the soil has been worked to a certain depth, with the upper layer loosened, whereas the lower strata often became harder, preventing roots from penetrating. Romperit is an explosive recommended to loosen these lower layers. Plants grown in soils thus treated develop a much deeper root system. After explosion Romperit develops N compounds that can be taken up by the plants. The cartridges contain 100-150 gm. of the explosive.—J. C. Th. Uphof.

6183. STARZYNSKI, ZYGMUNT. W sprawie klasyfikacji mechanicznej utworów glebowych. [The mechanical classification of soils.] (English summary.) Pamietnika Państw. Inst. Nauk. Gospodarstwa Wiejskiego w Pulawach 3: (1-34). 1922.

6184. STEPHENSON, R. E. Replaceable bases in Oregon soils. Jour. Amer. Soc. Agron. 17: 645. 1925.—Replaceable Ca is no doubt the most important single element.—F. M. Schertz.

6185. TRUFFAUT, GEORGES, AND N. BESSZONOFF. Sur la prédominance de l'activité des

fixateurs anaérobies d'azote dans le sol. [Predominance of anaerobic nitrogen fixers in the soil.] Compt. Rend. Acad. Sci. [Paris] 181: 165-167. 1925.—Eight series of experiments were performed with the same soil. The presence of N was determined with relation to the effect of aerobic and anaerobic conditions on its fixation. Four series were aerobic, and 4 anaerobic. Of each type, 2 contained CaCO_3 only and the other CaCO_3 together with minerals. Through the aerobic CaCO_3 mixture a current of air was passed, and through the anaerobic one, a current of N. Initial N and fixed N were determined, and the percentage increase recorded. In the aerobic cultures it varied from 6.31 to 11.61; in the anaerobic cultures from 12.62 to 18.42. The rate of fixation in anaerobic soil then is about double that in aerobic.—*C. H. Farr.*

6186. URETA, E. C. The effect on soil phosphorus of rice culture. Philippine Agric. 14: 173-183. 1925.

6187. VAGELER, P. Bodenkunde. [Soil science.] 104 p. Vereinigung Wissenschaftl. Verleger: Berlin and Leipzig, 1921.

6188. VEATCH, J. O. Classification of organic soils or muck. Michigan Agric. Exp. Sta. Quart. Bull. 5: 196-197. 1923.—The author has proposed a scheme of classification for the organic soils essentially the same as that now employed in the classification of mineral soils. The separate layers of a deposit are recognized and their characteristics, including color, texture, structure, chemical composition and thickness, are taken into consideration. By this system the type should be differentiated upon the basis of all characteristics and not upon a single peculiarity.—*T. D. Rice.*

6189. VOICU, JULIU. Influence du bore sur quelques microbes du sol. [Influence of boron on some microorganisms of the soil.] La Vie Universitaire: Paris, 1923.

6190. WEIR, WILBERT WALTER. Productive soils: the fundamentals of successful soil management and profitable crop production. 2nd ed., xv + 317 p. J. B. Lippincott Co.: Philadelphia and London, 1922.

6191. WHEATING, L. C. The lime situation in southwestern Michigan. Michigan Agric. Exp. Sta. Quart. Bull. 4: 132-134. 1922.

6192. WHITNEY, MILTON. Soil and civilization. A modern concept of the soil and the historical development of agriculture. 278 p. 30 fig., map. D. van Nostrand Co.: New York, 1925.—“A concept of the soil is a picture or an image such as the artist might see and place upon canvas. . . . This concept of the soil is in nontechnical language that will be understood and should be interesting to all readers. . . . This is followed by a description of the important soils of the United States which it is believed further illustrates and defines this concept. This in turn is followed by a short chapter describing the principles of the methods of soil control. The historical part of the book from the development of Man on the Earth through the agriculture of the Older Countries of the World and the Renaissance of Agriculture follows. . . .” A chapter on the rôle of fertilizers is also included.—*Frederick V. Rand.*

6193. ZACHAROWA, T. M. Die Abhängigkeit der Denitrifikationsgeschwindigkeit von der Reaktion des Mediums. [The dependence of the rapidity of denitrification upon the reaction of the medium.] Centralbl. Bakt. [etc.] II Abt. 65: 15-35. 1925.—The processes of denitrification were found to depend entirely upon the reaction of the medium. The optimum reaction for the decomposition of the nitrates is pH 7.0-8.2, especially at pH 7.9-8.2, the limiting reactions being pH 5.2-5.8 and 9.6-9.8. $\text{Sr}(\text{NO}_3)_2$ is decomposed more rapidly in solution than KNO_3 , due to the greater accumulation of alkalinity with the latter.—*S. A. W. (Contrib. by Absts. Bact.)*

6194. ZIOBROWSKI, S. W sprawie techniki oznaczania odczynu gleby. [Notes on the determination of soil acidity.] (French résumé.) Acta Soc. Bot. Poloniae 3¹: 65-67. 1925.—The author examined the influence of prolonged drying of the soil on the results of the determination of its acidity. The filtration of the solution obtained with the soil influenced the H-ion content equally. The numerical results are presented in a table.—*D. Szymkiewicz (translated).*

SOIL SURVEYS

6195. BENTON, J. H., AND W. W. STRIKE. Soil Survey of Hardin County, Iowa. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 717-757. 1 fig. 1 map (col.). 1923.
6196. BLAIR, A. W., AND A. L. PRINCE. The chemical composition of the soils of the Bernardsville area in New Jersey. New Jersey Agric. Exp. Sta. Bull. 406. 1-16. 1 fig. 1924.
6197. BLAIR, A. W., AND A. L. PRINCE. The chemical composition of the soils of the Chatsworth area in New Jersey. New Jersey Agric. Exp. Sta. Bull. 414. 1-15. 1 fig. 1925.
6198. CARPENTER, E. J., AND E. F. TORGERSON. Soil Survey of Benton County, Oregon. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 1431-1473. 2 pl., 1 fig. 1 map (col.). 1924.
6199. CARTER, WILLIAM T., JR., A. H. BAUER, J. F. STROUD, W. B. FRANCIS, AND T. M. BUSHNELL. Soil Survey of Dallas County, Texas. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 1213-1252. 2 pl., 1 fig. 1 map (col.). 1924.
6200. ENCULESCU, P. Solul din imprejurimile oraşului Careii Mari. [The soils in the vicinity of the City of Careii Mari (Rumania).] Viaţa Agricolă 16: 321-329. 1925.
6201. GEIB, W. J., A. L. GOODMAN, G. W. MUSGRAVE, C. B. CLEVINGER, AND T. J. DUNNEWALD. Soil Survey of Jackson County, Wisconsin. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1918: 5-41. 1 fig., 1 map (col.). 1922.
6202. GEIB, W. J., L. R. SCHOENMANN, W. B. COBB, V. C. LEAPER, AND W. H. PIERRE. Soil Survey of Walworth County, Wisconsin. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 1381-1428. 2 pl., 1 fig. 1 map (col.). 1924.
6203. GEIB, W. J., A. E. TAYLOR, J. E. KUBIER, H. W. STEWART, AND W. M. GIBBS. Soil Survey of Kenosha and Racine Counties, Wisconsin. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1919: 1-56. 1 fig. 1 map (col.). 1922.
6204. GEIB, W. J., J. A. WESLOW, F. J. O'CONNELL, JULIUS KUBIER, T. J. DUNNEWALD, H. W. STEWART, AND OSCAR MAGISTAD. Soil Survey of Adams County, Wisconsin. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 1121-1151. 1 fig., 1 map (col.). 1924.
6205. HAWKER, H. W., NEAL GEARREALD, AND M. W. BECK. Soil Survey of Tarrant County, Texas. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920: 859-904. 4 pl., 2 fig. 1 map (col.). 1924.
6206. KERR, J. A., W. I. WATKINS, W. H. PIERRE, AND J. A. MACHLIS. Soil Survey of Union County, South Dakota. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1921: 473-506. 1 fig., 1 map (col.). 1924.
6207. KIRK, N. M., E. H. STEVENS, C. H. DRINKARD, AND G. W. PATTESON, JR. Soil Survey of Pittsylvania County, Virginia. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1918: 5-44. 1 fig., 1 map (col.). 1922.
6208. KOCHER, A. E. Soil Survey of the Wenatchee Area, Washington. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1918: 5-90. 4 pl., 2 fig., 1 map (col.). 1922.
6209. LATIMER, W. J., E. B. DEETER, S. O. PERKINS, W. EDWARD HEARN, AND CORNELIUS VAN DUYN. Soil Survey of Spartanburg County, South Carolina. Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1921: 409-446. 1 fig., 1 map (col.). 1924.
6210. MCCOOL, M. M., AND G. M. GRANTHAM. Soils of the Detroit area. Michigan Agric. Exp. Sta. Spec. Bull. 104. 1-31. 14 fig. 1920.—The area concerned consists of all of Monroe County, most of Wayne County and parts of Washtenaw and Lenawee Counties. The elevation ranges from that of Lake Erie, about 575 feet above sea level, to the old shore line of the lake at about 800 feet. The soil types and typical agriculture of the region are discussed.—Ernst A. Bessey.
6211. NELSON, MARTIN, WARD H. SACHS, AND R. H. AUSTIN. The soils of Arkansas. Arkansas Agric. Exp. Sta. Bull. 187. 1 map. 1923.—A discussion of the physiography, drainage, climate, native vegetation, geology, and soil types of Arkansas, accompanied by photographs illustrating various soil type localities and a detailed soil map of the state. The discussion of each soil type is accompanied by an analysis showing content of N and P and

the soil reaction. General recommendations with respect to the use of fertilizers are made for each soil type.—*V. H. Young.*

6212. STRAHORN, A. T., SCOTT EWING, AND D. S. JENNINGS. *Soil Survey of the Ashley Valley, Utah.* Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920:907-936. 1 pl., 1 fig., 1 map (col.). 1924.

6213. WATKINS, W. I., J. M. SNYDER, AND HOWARD C. SMITH. *Soil Survey of Greenville County, South Carolina.* Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1921:189-211. 1 fig., 1 map (col.). 1924.

6214. WATKINS, W. I., C. E. DEARDORFF, J. G. HUTTON, AND J. A. MACHLIS. *Soil Survey of Beadle County, South Dakota.* Advance Sheets, Field Operations, Bur. Soils, U. S. Dept. Agric. 1920:1475-1498. 1 fig., 1 map (col.). 1924.

BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

CARROLL W. DODGE, *Editor*

(See also in this issue Entries 5779, 5835, 5836, 5850, 6051, 6739, 6740, 6937, 7014, 7020, 7305, 7421, 7564, 7619, 7790, 8046, 8398, 8819, 8991, 9558, 9560)

6215. ANONYMOUS. *American Fern Society.* Amer. Fern. Jour. 13: 61-62. 1923.—*Biography of Mrs. Nellie F. Flynn.*—*E. R. Walker.*

6216. ANONYMOUS. *Dr. Horace T. Brown.* Kew Bull. 1925: 96. 1925.—Brown died February 6, 1925. A list of his publications is given.—*T. J. Fitzpatrick.*

6217. ANONYMOUS. *Frederick Erskine Olmsted.* Jour. Forest. 23: 337-339. 1 pl. 1925.

6218. ANONYMOUS. *James Sykes Gamble [1847-1925].* Kew Bull. 1925: 433-439. 1925.—A sketch of the life and activities of this noted authority on the botany of India, including a list of his publications.—*T. J. Fitzpatrick.*

6219. ANONYMOUS. *Lord Avebury's life and influence.* [Rev. of: DUFF, MRS. ADRIAN GRANT, Editor. *The life and work of Lord Avebury (Sir John Lubbock), 1834-1913.* Comprising essays by BERNARD MALLET, ARTHUR KEITH, A. SMITH WOODWARD, J. ARTHUR THOMPSON, H. ST. J. K. DONISTHORPE, A. C. SEWARD, MICHAEL E. SADLER. vii + 261 p. Watts & Co.: London, 1924.] Nature 114: 239. 1924.

6220. ANONYMOUS. *Polska bibliografja botaniczna.* [Bibliography of Polish botany.] 1924. Acta. Soc. Bot. Poloniae 3: 141-144. 1925.

6221. ANONYMOUS. *The late Mr. Joseph Henry Maiden.* Victoria Nat. 42: 192-194. 1925.

6222. ANONYMOUS. *The naturalists' directory.* 226 p. Samuel E. Cassino: Salem, Massachusetts. 1925.

6223. ANONYMOUS. *William Watson [1858-1925].* Kew Bull. 1925: 94-96. 1925.—A general account of the work of William Watson, late curator at Kew, where he served 43 years; noted writer on horticultural subjects.—*T. J. Fitzpatrick.*

6224. ANGHEL, P. *Istoricul Societății de Medici și Naturaliști din Iași.* [The History of the Society of Physicians and Naturalists of Iassy.] Revista Științifică "V. Adamachi" 10: 333-341. 1924.—This history also partly describes the beginnings of cultivated botany in Rumania.—*Emil Pop.*

6225. BAKER, C. F. *Published contributions of College of Agriculture. II.* Philippine Agric. 13: 417-422. 1925.—Continues a previous bibliography (Ibid. 12: 261-292. 1923) and lists 330 contributions from the College of Agriculture, Los Baños, Philippine Islands, of which approximately 275 deal with botanical sciences.—*S. F. Trelease.*

6226. BEALS, A. T. *Edward Blanchard Chamberlain [1878-1925].* Bryologist 28: 43-50. 3 pl., 1 fig. 1925.—Chamberlain was a graduate of Bowdoin College, and the author of many papers on bryological subjects. He was a charter member of the Sullivant Moss Society and at the time of his death its Secretary-Treasurer. For many years he taught in the Franklin School for Boys in New York City.—*A. M. Taylor.*

6227. BECHER, KARL. A catalogue of early herbals mostly from the well known library of Karl Becher. *L'Art Ancien S. A.*: Lugano, 1925.

6228. BEGUINOT, AUGUSTO. Giulio Pontedera di Vicenza (1688-1757), botanico ed erudito nell'antichità classica. [Giulio Pontedera, Vicenza, (1688-1757), botanist and classicist.] In: MIELI, ALDO. *Gli scienziati italiani dall'inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 90-94. *portrait*. A. Nardecchia: Rome, 1921.—Graduating from the University of Padua in 1715, Pontedera devoted himself to the study of botany, publishing his first work in 1718. He became director of the botanic garden at Padua in 1719 and gave much time to pollination studies. He also edited the Roman Agricultural Writers. A full bibliography is appended.—C. W. Dodge.

6229. BEGUINOT, AUGUSTO. Prospero Alpino di Marostica (1553-1616), botanico, medico e viaggiatore. [Prospero Alpino of Marostica (1553-1616), botanist, physician and traveler.] In: MIELI, ALDO. *Gli scienziati italiani dall'inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 84-90. *Fig. 19-21*. A. Nardecchia: Rome, 1921.—Having given up a military career, Alpino entered the university at Padua and finished his medical course in 1578. After a brief practice at Padua he was called to Egypt in 1580 where he spent 4 years, then went to Genoa and in 1590 to Venice. In 1594 he accepted the chair of botany at Padua where he spent the rest of his life. He is best known for his works on Egypt. A full bibliography is appended.—C. W. Dodge.

6230. BEGUINOT, AUGUSTO. Roberto de Visiani di Sebenico (1800-1878), botanico. [Roberto de Visiani of Sebenico (1800-1878), botanist.] In: MIELI, ALDO. *Gli scienziati italiani dall'inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 24-31. *portrait*. A. Nardecchia: Rome, 1921.—Having received his medical degree from Padua in 1822, de Visiani spent 4 years with G. A. Bonato, then returned to Dalmatia to practice medicine. After further work at Vienna he succeeded Bonato at Padua in 1837. DeVisiani is known for his works on the Balkan flora, paleobotany and the history of botany. A full bibliography is appended.—C. W. Dodge.

6231. BESSEY, ERNST A. William James Beal. *Bot. Gaz.* 79: 103-106. *Portrait*. 1925.—A biographical sketch of the man who for 40 years was Professor of Botany at the Michigan Agricultural College.—B. W. Wells.

6232. BIDWELL, PERCY WELLS, AND JOHN IRONSIDE FALCONER. *History of agriculture in the Northern United States 1620-1860*. Carnegie Inst. Washington Publication 358. xii + 512 p., 2 pl. 1925.

6233. BLARINGHEM, LOUIS. *Pasteur et la transformisme, avec une preface de M. J. Costantin*. xiv + 261 p. Masson et Cie.: Paris, 1923.

6234. [BONDARTZEV, A. S.] Бондарцев, А. С. Некролог. Иван Львович Сербинов [Necrology. Ivan Lvovitch Serbinov] *Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, P. C. Ф. C. P.* [Plant Diseases, Jour. Div. Phytopath. Main Bot. Garden, U. S. S. R.] 1925: 149-157. 1925.—The paper is a brief biography of I. L. Serbinov, one of the most active Russian workers in the field of Phytopathology and Mycology who died on Oct. 26, 1925. He was born in 1872, graduated at the University of St. Petersburg in 1898. During his life he was working in St. Petersburg, Crimea and in Odessa where he was Professor of Microbiology and Phytopathology at the Agricultural College of the city. He published over 100 works and twice as many different reviews and notes, mostly on bacterial diseases of plants. A list of 106 of his published and ready for publication works is given.—C. D. Sherbakoff.

6235. BROOME, HERBERT C. William Henry Pearson—a bibliography. *Bryologist* 27: 96-101. 1924.—About 135 botanical papers are listed. These consist of papers on original research, reviews and translations, chiefly upon Bryophytes.—A. M. Taylor.

6236. BROTHERSTON, R. P. Some old Scottish plant names. *Gard. Chron.* [London] Ser. III. 74: 278. 1923.—Scotland had no herbals, but in a copy of *The Poor Man's Physician* by W. MONTCRIEFF, have been found the common names of many of the plants. An extensive list of the names is given.—P. L. Ricker.

6237. CESARI, R. La produzione del grano nell'Italia antica. [Production of grain in ancient Italy.] *Geographia* No. 5/6. Jan., 1923.

6238. CHEYNE, W. WATSON. Memorial lecture on Lister's great achievement. *Lancet*

[London] 208: 1011. 1925.—A discussion of his work on sepsis and putrefaction and on the origin of life, together with his application of Pasteur's results.—*E. M. A. E.* (*Contrib. by Absts. Bact.*)

6239. COATES, H. *A Perthshire naturalist; Charles Macintosh of Inver with a chapter on Scottish folk music* by A. WISEMAN. xx + 224 p. 32 pl. T. Fisher Unwin: London, 1923.

6240. CORRENS, C. Gottlieb Haberlandt, zum siebzigsten Geburtstag aus 28 Nov. 1924. [Gottlieb Haberlandt, on his seventieth birthday.] *Naturwissenschaften*. 12: 1087–1091. Pl. 1. 1924.—A tribute to and a discussion of the work of Haberlandt in physiological plant anatomy. A fine photograph of Haberlandt accompanies the article.—*Orton L. Clark.*

6241. CORSINI, ANDREA. Antonio Cocchi di Benevento (1695–1758), medico naturalista, letterato, numismatico. [Antonio Cocchi of Benevento (1695–1758), physician, naturalist, litterateur and numismaticist.] In: MIELI, ALDO. *Gli Scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 12–19, *portrait*. A. Nardecchia: Rome, 1921.—Cocchi was a friend of Antonio Micheli and a charter member of the Societa botanica founded in 1734. A full bibliography is appended.—*C. W. Dodge.*

6242. COTTON, A. D. Miss L. S. Gibbs. *Kew Bull.* 1925: 189. 1925.—Death occurred January 30, 1925. A short account of her life, travels, collections and publications.—*T. J. Fitzpatrick.*

6243. CRISP, FRANK. *Mediaeval gardens, "Flowery Medes" and other arrangements of herbs, flowers, and shrubs grown in the middle ages, with some account of Tudor, Elizabethan, and Stuart gardens.* Edited by CATHERINE CHILDS PATERSON, 2 vols. John Lane: London, 1924.—A historical account of the various features of old gardens, with several hundred illustrations, a bibliography and two indexes.—*P. L. Ricker.*

6244. CUBONI, GIUSEPPE. *Scitti scelti Cuboniani*. A cura del G. B. TRAVERSO. [Selected writings of Cuboni edited by G. B. Traverso.] xxx + 240 p. Premiata Tipografia Successori Fratelli Fusi: Pavia, 1924.

6245. DICKS, S. B. *Borecole of Kale*. *Gard. Chron.* [London] III. 78: 154–155. Pl. 60–61. 1925.—A history of the plants from Theophrastus, 350 B. C., to the present time, with notes on the value of some of the varieties.—*P. L. Ricker.*

6246. DRUCE, G. CLARIDGE. *Obituaries of Charles Bailey, Roland Bonaparte, James Britten, W. Botting Hemsley, Robert Kidston, R. Irwin Lynch, Harry Veitch, James Alfred Wheldon, etc.* Rept. Bot. Soc. and Exchange Club British Isles. 1924: 526–552. 1925.

6247. DRUCE G. CLARIDGE. *Obituaries of W. Barclay, N. C. Rothschild, and F. N. Williams, author of Prodrromus Florae Britannicae.* Rept. Bot. Soc. and Exchange Club British Isles 1923: 145–164. 1924.

6248. FEIN, A. Erich Behnick. *Möllers Deutsch. Gärtnerzeitg.* 40: 332. 1925.—Behnick died August 8, 1925 at 52 years of age. He was a prominent German horticulturist with broad training and experience, and technical leader of the Botanical Garden, Heidelberg.—*J. C. Th. Uphof.*

6249. FLAHAULT, CH. L'abbé Coste [1858–1924]. *Bull. Soc. Bot. France* 72: 811–821. 1925.—A curé at a village of Aveyron, he made collections in the Cevennes, Provence, the Pyrenees, Alps and, with Burnat, in the maritime Alps. His chief work is "Flore descriptive et illustree de la France, de la Corse et des regions limotrophes" (1902–1906). The article ends with a list of 43 publications.—*J. Beauverie.*

6250. FORTI, A. Giovanni Battista De Toni (1864–1924). *Bull. Soc. Bot. Italiana* 7: 154–159. 1924.

6251. FORTI, A. Giovanni Battista de Toni, F. M. L. S., Hon. F. R. M. S. (1864–1924). *Jour. Bot.* 63: 200–202. 1925.

6252. FORTI, ACHILLE. Giovanni Battista de Toni. *Commemorazione*. 180 p. Premiate Officine Grafiche Carlo Febrari: Venezia, 1925.

6253. GOEBEL, K. VON. Wilhelm Hofmeister, *Arbeit und Leben eines Botanikers des 19. Jahrhunderts . . .* (mit biographischer Ergänzung von FRAU GANZEMÜLLER.) [Wilhelm Hofmeister, life and work of a botanist of the nineteenth century (with a biographical résumé by MRS. GANZEMÜLLER.)] 177 p. Akademische Verlagsgesellschaft: Leipzig, 1924.

6254. GRAUTOFF, OTTO. *Die französischen Akademien in der Provinz.* [The French Academies in Provence.] *Minerva-Zeitschr.* 1: 136–139. 1925.

6255. GREGORY, J. W. Science and administration in East Africa. *Nature* 115: 753-755. 1925.—Reference is made to 2 government publications mentioning especially the Amani Institute which was established by the German government.—*O. A. Stevens.*

6256. GROSS, J. Mendel und Darwin. [Mendel and Darwin.] *Naturwissenschaft.* 13: 349-351. 1925.

6257. GUÉMARD, GABRIEL. Essai de bibliographie critique de l'Institut d'Egypte et de la Commission des Sciences et Arts. [An attempt at a critical bibliography of the Institut d'Egypte.] *Bull. Inst. Egypt* (Tome premier Session 1922-1923) 6: 135-157. 1923 [1924].

6258. GUÉMARD, GABRIEL. Essai d'histoire de l'Institut d'Egypte et de la Commission des Sciences et Arts. *Bull. Inst. Egypte* 6: 43-84. 1923 [1924].

6259. GUNTHER, R. T. Early science in Oxford. Vol. III. The biological sciences; the biological collections. *xii + 564 p., 64 pl.* Oxford, 1925.—[See also *Bot. Absts.* 15, Entry 2333.]

6260. HALL, CHARLES JAMES. A short history of English agriculture and rural life. *iii + 162 p. Illus.* A. & C. Black, Ltd.: London, 1924.

6261. HAUMAN, LUCIEN. La obra botanica del Dr. Carlos Spegazzini. [The botanical work of Carlos Spegazzini.] *Physis* (Rev. Soc. Arg. Cienc. Nat.) 6: 303-308. 1923.

6262. HICKEN, C. M. Gustav Niederlein. *Darwiniana* 1: 179-181. 1924.—A short biographical sketch with a list of publications of this Argentine botanist.—*Author.*

6263. HICKEN, C. M. Progresos en el estudio de la flora del Uruguay. [Progress in the study of the flora of Uruguay.] *Darwiniana* 1: 154-158. 1924.—A biography of the German botanist, W. Herter, and a list of literature published during his stay in Uruguay.—*Author.*

6264. HICKEN, C. M. Ricardo Napp. *Darwiniana* 1: 182-183. 1924.

6265. HICKEN, C. M. W. Herter: Datos biográficos. *Darwiniana* 1: 155-158. 1924.

6266. HOLM, THEO. Mark Alfred Carleton [1866-1925]. *Amer. Jour. Sci.* 10: 382. 1925.—Carleton's life work was largely with cereals.—*T. J. Fitzpatrick.*

6267. HOLM, THEO. Mark Alfred Carleton. *Bot. Gaz.* 80: 111-113. *Portrait.* 1925.—A biographical sketch with especial reference to the work of Carleton in pathology and agricultural exploration.—*B. W. Wells.*

6268. HOLMES, S. J. Louis Pasteur. *vi + 246 p.* Harcourt, Brace & Co.: New York, 1924.

6269. H[UART], V. A. L'abbé Provancher (Continué de la page 264, Vol. 51). *Nat. Canadien* 51: 265, 279-280. 1925; 52: 19-23, 42-47, 66-71, 84-92, 105-113, 133-140. 1925; 158-164, 184-187, 208-215. 1926.—A biographical sketch of the great Quebec naturalist who was the founder of "Le Naturaliste Canadien."—*A. H. MacKay.*

6270. HUME, ETHEL DOUGLAS. Béchamp or Pasteur? A lost chapter in the history of biology. *viii + 296 p.* Covici-McGee: Chicago, 1923.

6271. ILTIS, H. Gregor Johann Mendel, Leben, Werk, und Wirkung. [Life, work, and accomplishment of Mendel.] *vii + 426 p., 12 pl.* J. Springer: Berlin, 1924.

6272. IMPERIAL BUREAU OF MYCOLOGY, KEW. Mycologists resident in the British Empire, 1925. Oxford University Press: London, 1925.

6273. JOHANNSEN, WILHELM LUDVIG. Biologi; træk af de biologiske videnskabers udvikling i det nittende aarhundrede. [Biology; Characteristics of the development of biological science in the nineteenth century.] *199 p. Illus.* Gyldendal, Nordisk Forlag: [Kjøbenhavn], 1922.

6274. KUNERT, F. Max Burger [horticulturist]. *Möllers Deutsch. Gärtnerzeitg.* 40: 308. 1 fig. 1925.

6275. LEIPER, ROBERT THOMSON. Periodicals of medicine and the allied sciences in British libraries, including the sciences of agriculture, anatomy, anthropology, bacteriology, biology, botany, chemistry, ethnology, general science, physics, physiology, zoology. *vi + 193 p.* The British Medical Assoc.: London, 1923.

6276. MAYER, ADOLF. Zur Geschichte der Agrikulturchemie. [History of agricultural chemistry.] *Naturwissenschaften* 12: 885-887. 1924.

6277. [MERRIAM, JOHN C.] Report of the president of the Carnegie Institution of Washington for the year ending October 31, 1925. *Carnegie Inst. Washington* [D. C.] Year Book 24:

3-36. 1925.—This report contains a "list of publications issued by Carnegie Institution of Washington during the year ending October 31, 1925," and a "bibliography of contributions to knowledge relating to work of investigators, associates, and collaborators issued through channels other than the publications of the Carnegie Institution of Washington."—*Frederick V. Rand*.

6278. MÖLLER, ALFRED. Fritz Müller. Werke, Briefe und Leben. [Works, letters and life] Bd. 1. Gesammelte Schriften, soweit sie bereits früher im Druck erschienen sind. [Published writings.] xviii + 1510 p., 85 pl., 303 fig. 1915. Bd. II. Briefe und noch nicht veröffentlichte Abhandlungen aus dem Nachlass. 1854-1897. [Letters and unpublished contributions.] viii + 667 p., 4 pl., 239 fig. 1921. Bd. III. Fritz Müllers Leben. [Fritz Muller's life.] vii + 163 p., Frontispiece, 6 fig., 1 chart. 1920.

6279. MONTI, RINA. Giovanni Briosi. Commemorazione. [Obituary of Giovanni Briosi.] Rendiconti R. Ist. Lombardo Sci. e Lettere 55: 415-421. 1922.—A brief review is given of Briosi's life and influence on the development of botany in Italy, enumerating his most important contributions to plant physiology and phytopathology.—*Edith K. Cash*.

6280. OSBORN, HENRY FAIRFIELD. Impressions of great naturalists. 216 p., portraits, Charles Scribner's Sons: New York, 1925.—This is a book of reminiscences of Darwin, Huxley, Balfour, Pasteur, and others.—*C. W. Dodge*.

6281. OSTERHOUT, W. J. V., ET AL. George Lincoln Goodale [1839-1923]. Amer. Jour. Sci. 6: 275, 276. 1923.—Goodale was educated at Amherst College and at the Bowdoin and Harvard Medical Schools, received an appointment at Harvard College in 1872, and retired in 1909.—*T. J. Fitzpatrick*.

6282. P., J. H. Obituary. Jean Massart [1865-1925]. Nature 116: 790-791. 1925.—His earlier work was on the lower plants and animals, but outside Belgium he is best known by his work on vegetation.—*O. A. Stevens*.

6283. PAMPANINI, R. Gli alberi piu annosi del R. Giardino Botanico (Orto dei Semplici) di Firenze. [The oldest trees of the royal Botanical Garden of Florence.] Nuovo Gior. Bot. Italiano 32: 363-379. 1925.—The author examines critically the data on the date of planting of the 29 oldest trees of the Bot. Garden of Florence, whose planting has been attributed to P. A. Michele (1679-1737). He finds that only a *Taxus baccata* was planted by Michele; the planting of the rest is attributed to O. Targioni Tozzetti (Prefect of the Gardens 1801-1829).—*P. D. Caldis*.

6284. PARODI, LORENZO R. La obra botánica del profesor Lucien Hauman. [The botanical work of professor Lucien Hauman.] Anal. Soc. Cient. Argentina 100: 116-124. 1925.—A detailed bibliography of his botanical publications, both those of his earlier life in Belgium and of his later years in Argentina. The 93 titles enumerated are grouped under the following headings: monographs, floristics, etiology, phytogeography, phytopathology, microbiology, bibliography, education, and miscellaneous topics (8 titles).—*F. W. Pennell*.

6285. PEASE, ALFRED E. Edmund Loder; naturalist, horticulturist, traveller, and sportsman: a memoir. [With contributions by St. George Littleddale, Chas G. A. Nix, Lord Cottesloe, J. G. Millais, and W. P. Pyecraft.] x + 356 p. John Murray: London, 1923.

6286. PETCH, T. Bibliography of books and papers relating to agriculture and botany to the end of the year 1925. [Peradeniya Manuals III] Government Printing Dept.: Colombo, 1925.

6287. RENDLE, A. B. William Carruthers, 1830-1922. Proc. Roy. Soc. London B 97: vi-viii. 1925.—Educated at Edinburgh, Carruthers was keeper of the department of botany of the British Museum from 1871 to 1895, president of the Linnean Society from 1886 to 1890, of the Royal Microscopical Society, 1901-2, and in 1886 of the Biological Section of the British Association. His chief contributions to pure science were in paleobotany, especially Carboniferous. He founded the genera *Yatesia*, *Williamsonia* and *Bennetites*. From 1871 to 1910 he served as consulting botanist to the Royal Agricultural Society.—*P. B. Sears*.

6288. SCHIERBEEK, A. Van Aristoteles tot Pasteur: Leven en Werken der groote Biologen. [From Aristotle to Pasteur: life and work of the great biologist.] 479 p. W. Versluys: Amsterdam, 1923.

6289. SCHREIBER, WILHELM LUDWIG. Die Kräuterbücher des XV. und XVI. Jahrhunderts [Herbals of the 15th and 16th centuries.] 62 p. Münchener Drücke: München, 1924.

6290. SEGRET, L. ABBÉ. *La botanique en Sologne, autrefois et aujourd'hui*. Bull. Soc. Bot. France 72: 763-768. 1926.

6291. SINGLETON, ESTHER. *The Shakespeare garden*. xxii + 360 p. Methuen & Co.: London, 1923.

6292. STAFF, O. Dr. Georg Schweinfurth [1836-1925]. Kew Bull. 1925: 394-397. 1925.—An account of the life and explorations of the noted botanist.—*T. J. Fitzpatrick*.

6293. STEFANINI, GIUSEPPE. Antonio Figari-bey di Genova (1804-1870), naturalista, viaggiatore. [Antonio Figari-bey of Genoa (1804-1870), naturalist and traveler.] In: MIELI, ALDO. *Gli scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 31-36, fig. 6-7. A. Nardecchia: Rome, 1921.—After training in pharmacy, Figari went to Alexandria in 1825 and held various official positions in the Egyptian government, including that of the chair of botany at the military school at Abu Zabel and the medical school at Cairo 1833-1870. He botanized extensively in Egypt, Sinai, and Arabia. His main collections went to the museum in Florence, but extensive collections by him are located at Kew, Berlin, and Montpellier. His paleontological collections are in the Istituto di Studi Superiore at Florence and his mineralogical collections are in the Museo Civico at Genoa. A full bibliography is appended.—*C. W. Dodge*.

6294. STEFANINI, G. Diacinto Cestoni di Santa Maria in Giorgio (10 maggio 1637-29 genn. 1718), naturalista. [Diacinto Cestoni of Santa Maria in Giorgio (May 10, 1637-Jan. 29, 1718), naturalist.] In: MIELI, ALDO. *Gli scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 122-12, fig. 27-28. A. Nardecchia: Rome, 1921.—A friend of Valisnieri, Cestoni is known for his works on marine life. A full bibliography is appended.—*C. W. Dodge*.

6295. STONE, WITMER. Stewardson Brown. *Bartonia* 8: 1-6. 1924.—Brown (1867-1921) was interested in the Academy of Natural Sciences of Philadelphia from 1888, and, from 1900 to his death, was Curator of its Herbarium. He visited for botanical work, besides portions of the eastern U. S. A., the Canadian Rockies, Bermuda, Jamaica, Trinidad and Venezuela. He was author of an "Alpine Flora of the Canadian Rocky Mountains" (1907), and joint-author with I. A. Keller of a "Handbook of the Flora of Philadelphia and Vicinity" (1905).—*F. W. Pennell*.

6296. SWINGLE, WALTER TENNYSON. Chronologic list of the dissertations of Charles Linnaeus 1743 to 1776. With reference to the libraries in the United States containing original editions of these dissertations. Prepared and photographed in the office of the chairman of the Library committee of the United States Dept. Agric. 2 p. U. S. Dept. Agric.: Washington, D. C., 1923.

6297. THOMPSON, REGINALD CAMPBELL. *The Assyrian Herbal*. Luzac: London, 1924.

6298. TONI, G. B. DE. Antonio Piccone di Albissola marina (11 settembre 1844-Genova, 21 maggio 1901), botanico. [Antonio Piccone of Albissola Marina (Sept. 11, 1844-Genoa, May 21, 1901), botanist.] In: MIELI, ALDO. *Gli scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 111-114, *portrait*. A. Nardecchia: Rome, 1921.—Piccone became a student at the Ateneo of Genoa in 1861 under Giuseppe de Notaris. Graduating in 1864, he held a number of teaching positions about Genoa for the remainder of his life. He is best known for his works on algology. His herbarium is preserved with that of Achille Forti of Verona. A full bibliography is appended.—*C. W. Dodge*.

6299. TONI, G. B. DE. Bartolomeo Maranta di Venosa (c. 1500-marzo 1571), medico e semplicista. [Bartolomeo Maranta of Venosa (c. 1500-March 1571), physician and herbalist.] In: MIELI, ALDO. *Gli scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 68-70, fig. 12-13. A. Nardecchia: Rome, 1921.—Little is known of Maranta's life but a full bibliography of his works is given.—*C. W. Dodge*.

6300. TONI, G. B. DE. Bonaventura Corti di Corti presso Viano (26 febbraio 1729-3 febbraio 1813), botanico. [Bonaventura Corti of Corti-by-Viano (Feb. 26, 1729-Feb. 3, 1813), botanist.] In: MIELI, ALDO. *Gli scienziati italiani dall' inizio del medio evo ai nostri giorni*. Vol. I, Pt. I. P. 70-73, *portrait*. A. Nardecchia: Rome, 1921.—Corti, after teaching in the Collegio di S. Nazario (1754-1767), succeeded Spallanzani at Modena (1767-1806) as rector of the Collegio di San Carlo. He was professor of botany and agronomy at the university

1806-1809. He is best known for his work on movements of Oscillatoriaceae, protoplasmic streaming in Characeae, and agricultural treatises. A full bibliography is appended.—*C. W. Dodge.*

6301. TONI, G. B. DE. Giovanni Battista Amici di Modena (25 marzo 1786-10 aprile 1863), ottico, astronomo e naturalista. [Giovanni Battista Amici of Modena (Mar. 25, 1786-Apr. 10, 1863), optician, astronomer, and naturalist.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Pt. I. P. 78-83, *portrait*. A. Nardecchia: Rome, 1921.—Amici taught mathematics and astronomy most of his active life at Pisa and Modena. He is best known for his work in perfecting the microscope and telescope. He also published many microscopical observations on anatomy and morphology of plants. A bibliography of 61 titles is appended.—*C. W. Dodge.*

6302. TONI, G. B. DE. Giovanni Passerini di Pieve di Guastalla (16 giugno 1816-17 aprile 1893), botanico. [Giovanni Passerini of Pieve di Guastalla (June 16, 1816-Apr. 17, 1893), botanist.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Pt. I. P. 119-122, *portrait*. A. Nardecchia: Rome, 1921.—Passerini was director of the botanic garden at Parma (1844-1893), president of the faculty of science and director of the schools of pharmacy and veterinary medicine, and rector of the university (1879-1885). He is known for his work on aphids, floristics and fungi. A full bibliography is appended.—*C. W. Dodge.*

6303. TONI, G. B. DE. Giovanni Zanardini di Venezia (12 giugno 1804-24 aprile 1878), medico e botanico. [Giovanni Zanardini of Venice (June 12, 1804-Apr. 24, 1878), physician and botanist.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Pt. I. P. 115-118, *portrait*. A. Nardecchia: Rome, 1921.—Zanardini received his baccalaureate at Padua in 1831 and his doctorate in surgery and obstetrics at Pavia in 1834. He was connected with various penal institutions as physician until 1869 and was vice secretary of the Regio Istituto Veneto di Scienze, Lettere ed Arti (1870-1878). He is best known for his algological works. His algological herbarium is in the Museo Civico at Venice and his phanerogamic herbarium is in the Regio Istituto Veneto. A full bibliography is appended.—*C. W. Dodge.*

6304. TONI, G. B. DE. Luca Ghini di Croara d' Imola (c. 1490-4 maggio 1556), medico e botanico. [Luca Ghini of Croara d' Imola (c. 1490-May 4, 1556), physician and botanist.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Part I. P. 1-4, *fig. 1-2*. A. Nardecchia: Rome, 1921.—Ghini was educated at Bologna and held various professorships there (1527-1544), at Pisa (1544-1554), and again at Bologna (1554-1556). He is credited with founding the botanic gardens at Florence and Pisa. Full bibliography is appended.—*C. W. Dodge.*

6305. TONI, G. B. DE. Luigi Squalermo detto Anguillara di Anguillara Sabazia (?) (c. 1512-5 settembre 1570), botanico. [Luigi Squalermo called Anguillara of Anguillara Sabazia (?) (c. 1512-Sept. 5, 1570), botanist.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Pt. I. P. 76-78. A. Nardecchia: Rome, 1921.—Vari-ously called Aloysius Anguillara and Aloysius Romanus, Luigi Squalermo was the first prefect of the botanic garden of Padua (1546-1561). He was physician to Duke Alfonso II at Ferrara from 1561 until his death there by pestilential fever in 1570. A full bibliography is appended.—*C. W. Dodge.*

6306. TONI, G. B. DE. Melchiorre Guilandino di Königsberg (c. 1520-Padova 8 gennaio 1589), botanico e viaggiatore. [Melchiorre Guilandino of Königsberg (c. 1520-Padua Jan. 8, 1589), botanist and traveler.] In: MIELI, ALDO. Gli scienziati italiani dall' inizio del medio evo ai nostri giorni. Vol. I, Pt. I. P. 72-76, *fig. 16-17*. A. Nardecchia: Rome, 1921.—Guilandino or Wieland, a learned German traveler and physician, ransomed from Algerian pirates by Falloppia and shipwrecked on his return journey, was rescued and brought back to Genoa. He succeeded Anguillara as director of the botanic garden at Padua, where he died. He furnished much information to his contemporaries although publishing little himself. A full bibliography is appended.—*C. W. Dodge.*

6307. [ВАВИЛОВ, Н. И.] Вавилов, Н. И. А. П. Попова. (А. Р. Попова, Nekrolog) Труды Прикл. Бот. Селекции [Bull. Appl. Bot. and Plantbreed.] 14: 314. 1 *portrait*.

1924-1925 [1925].—Miss A. P. Popova died on May 28, 1924. She was an investigator at the Institut for Applied Botany and New Cultures in Leningrad.—*M. Demerec.*

6308. [VAVILOV, N. I.] Вавилов, Н. И. В. М. Исаев. [V. M. Isaev.] Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. & Plantbreed.] 14: 312-313. 1 portrait. 1925.—In August, 1924, Isaev, while on vacation, was taken prisoner by remnants of the White Army and killed. He was a promising young geneticist especially interested in animal chimeras.—*M. Demerec.*

6309. WINSHIP, A. E., ET AL. Fifty famous farmers. xiv + 407 p. The Macmillan Company: New York, 1924.

6310. [ЗНЕГАЛОВ, S.] Жегалов, С. А. Г. Николаева [A. G. Nikolaeva]. Труды Прикл. Бот. Селекции [Bull. Appl. Bot. & Plantbreed.] 14: 315-317. 1 portrait. 1925.—Miss A. G. Nikolaeva died Nov. 4, 1925, in Moscow, where she was an investigator at the Plant Breeding Station of Petrovska Akademia. She was known through her work on cytology of hybrids between different cereals.—*M. Demerec.*

6311. ZIMMERMANN, A. Carl Erich Correns. Zur Feier Seines Sechzigsten Geburtstages. [Carl Erich Correns, In honor of his sixtieth birthday.] Naturwissenschaften 12: 751-780. 1 plate. 1924.—A memorial number with articles by ZIMMERMANN, RENNER, NILSSON-EHLE, v. WETTSTEIN, GOLDSCHMIDT, and SIERP. A list of Correns' published works concludes the number.—*Orton L. Clark.*

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

ARTHUR H. GRAVES, *Assistant Editor*

(See also in this issue Entries 5818, 6255, 6504, 6854, 6857, 7475)

6312. ANONYMOUS. Lists of staffs of the Royal Botanic Gardens, Kew, and of botanical departments, establishments and officers at home, and in the dominions, India, the colonies, protectorates, etc., in correspondence with Kew. Kew Bull. Appendix III, 1925: 69-85. 1925.—Gives the personnel with indications of the special lines of investigations.—*T. J. Fitzpatrick.*

6313. ANONYMOUS. The Mauritius college of agriculture. Kew Bull. 1925: 321-325. 1925.—The school was formally opened March 12, 1925. Extracts from addresses made at the inaugural comprise most of the article.—*T. J. Fitzpatrick.*

6314. BARCLAY, D., H. M. L. BOLUS, AND E. J. STEER. A book of South African flowers. Specialty Press: Capetown, 1925.

6315. BAUMGÄRTEL, T. Zur Pflege der Mikrobiologie als Wissenschaft. [The position of microbiology as a science.] Zeitschr. Immunitätsforsch. u. Exp. Therap. Teil I. 43: 409-421. 1925.—In Germany and other countries, microbiology has generally been used as a term to designate medical and veterinary bacteriology, mycology and protozoology. This paper is a protest against that limitation of the term and a summary of the scientific importance of all kinds of microscopic organisms. Microbiology as a science should embrace all the doctrine of this wide field of knowledge and investigation.—*S. B.-J. (Contrib. by Absts. Bact.)*

6316. BOWER, F. O. English and German botany in the middle and towards the end of last century. New Phytol. 24: 129-137. 1925.—At the middle of the 19th century there was a strange contrast between the deadness of British educational methods and the brilliancy of individual production. The publication of Sachs's textbook, including also the work of Hofmeister and of Bornet and Thuret, produced far-reaching results. The introduction of systematic laboratory training by Huxley finally dispelled the educational torpor in Great Britain. The author relates his experiences in the laboratory of Sachs in 1877 and more detailed reminiscences with DeBary in Strassburg in 1879-1880. With the present tendency of British botany towards specialization in agriculture, forestry, pathology, and breeding, there is grave risk that the central institutions lose again their hold upon the broad stream of pure science.—*I. F. Lewis.*

6317. DAVIS, K. C. *Productive plant husbandry, a textbook for high schools.* 3rd ed. xvi + 462 p. *Illus.* J. B. Lippincott Co.: Philadelphia, [1925].

6318. DOWNING, ELLIOT R. *Reorganization of the biology course to meet the needs of democracy.* Gen. Sci. Quart. 9: 215-221. 1925.—A review is given of the apparent decline of the importance of biology in the high school curriculum and a consideration of subject matter, methods and point of emphasis desirable for securing larger benefits from biology teaching.—*L. A. Kenoyer.*

6319. GRAVES, HENRY S. *Education in forestry.* Jour. Forest. 23: 108-125. 1925.

6320. HERBERT, P. A. *Collegiate forestry education.* Jour. Forest. 23: 880-886. 1925.

6321. HOSMER, RALPH SHELDON. *The progress of education in forestry in the United States.* Empire Forest. Jour 3: 83-106. 1923.

6322. LAURIN, M. T. *L'école rurale et la profession agricole.* [The country school and the profession of agriculture.] 236 p. Bibliotheque d'Education: Paris, 1925.

6323. LAWRENCE, W. E. *A laboratory manual for the study of general botany.* 2nd ed. 208 p. *Illus.* Oregon Agric. Coll. Press: Corvallis, 1925.—The work is divided into 2 parts. In Part I the structure and functions of the seed plants are treated. Part II discusses the 4 great groups of plants: their structure, relationship, reproduction and origin. Nuclear division and plant breeding are also dealt with. Suggestive questions are interspersed throughout and comprehensive reviews are inserted at regular intervals. The necessary equipment for each student is noted, and, in an appendix, a complete list of all the material required for laboratory work in such a course is presented.—*John M. Fogg, Jr.*

6324. MOREUX, TH. *Pour reconnaître les fleurs.* [How to know the flowers.] 2 vol. I: Flore simplifiée. 212 p. II: Atlas de la Flore simplifiée. 150 pl. Gaston Doin: Paris, 1923.

6325. NĚMEC, B. *Rostlinná biologie.* [The biology of plants.] 201 p., *Illus.* Nová Encyclopedie Přírodních věd.: Prague, 1925.—A textbook for students of biology. The chapter headings, translated, are as follows: Plants are living organisms; The structure of plants; Nutrition; Growth; Movements; Reproduction.—*Silvestr Prát.*

6326. OSBORN, LUCRETIA PERRY. *The chain of life.* 189 p. *Illus.* Charles Scribner's Sons: New York and London, 1925.—"The processes and methods of Evolution are . . . more or less perfectly known. The causes of Evolution are still only partially known and this is the only debatable part of Evolution today. This book is planned to make this knowledge accessible to laymen and to students . . ."

6327. ROBERTS, E., AND E. DAVENPORT. *Plant and animal improvement. A textbook for students of agriculture.* xii + 174 p. *Illus.* Ginn & Company: Boston, 1925.

6328. ROBSON, FORSTER. *Our wayside trees and how to know them.* New ed. 125 p. Thornton Butterworth, Ltd.: London, 1923.

6329. ROSSNER, FERDINAND. *Einschränkung des botanischen Unterrichts an den höheren Schulen Preussens.* [Curtailling botanical education in higher institutions of Prussia.] Mitteil. Deutsch. Dendrol. Ges. 35: 297-298. 1925.—Under the former system, education in botany among the "Sextaner" began with morphology. This was extended in the "Quinta." In the "Quarta" a general introduction was given to the natural system of classification of the flowering plants. The "Untertertia" treated the conifers and the cryptogams; in the "Obertertia" (at least in the Gymnasia) the physiology and anatomy of plants were considered. In the new instruction in botany the instructor has been given more freedom. The "Sextaner" becomes acquainted with plant associations and this study is extended the following years. The "Quarta" takes up anatomy and systematic botany.—*J. C. Th. Uphof.*

6330. ROWLEY, JOHN. *Taxidermy and museum exhibition.* xvi + 331 p. 21 fig. D. Appleton & Co.: New York, 1925.—Preface by Frank M. Chapman. Only chapter VIII (pp. 222-299), entitled, "Accessories," has to do with plant life. The sub-headings of this chapter are: Preserving natural plants and flowers; making artificial plants and flowers in wax and celluloid; coloring, mounting, assembling. Valuable formulae are given for preserving, and for bleaching and dyeing plant tissue; also directions for preserving flowers without pressing them.—*C. S. Gager.*

6331. SCHOENICHEN, WALTHER [Editor]. *Biologische Studienbücher. I. Praktische*

Übungen zur Vererbungslehre für Studierende, Ärzte und Lehrer. [Practical studies in genetics for students, physicians, and teachers.] 85 p. 35 fig. 1923. II. Biologie der Blütenpflanzen: eine Einführung an der Hand Mikroskopischer Übungen. [Biology of the flowering plants: an introduction to studies with the hand microscope.] 216 p. 306 fig. Theodor Fischer: Freiburg in Breisgau, 1924.

6332. SCOTT, GEORGE G. The science of biology. An introductory study. xii + 617 p., 355 fig. Thomas Y. Crowell Co.: New York, 1925.—“Any comprehensive survey of Biology must include a study of Plant life as well as of Animal life . . . the author has chosen to make a study of the entire series of Plant types, followed by a similar study of Animal forms. Principles are introduced as groups are taken up, and then reiterated as they appear in the study of higher groups.” Part I gives a general discussion of the biological sciences, of protoplasm and of the cell. In parts II and III, the biology of the Phyla of plants and of animals, respectively, is discussed. Part IV, General biology, takes up comparative anatomy, histology, embryology, physiology of animals, distribution of animals in space and time, adaptation and evolution, and the biology of man. Appendices outline the classification of animals and of plants, and the distribution of organisms in time, and give a “biographical catalogue of some master biologists.” Selected references follow the individual chapters.—*Frederick V. Rand.*

6333. STEP, EDWARD. Wild flowers: month by month in their natural haunts. Vol. 1. 200 p. Vol. 2. 199 p. F. Warne and Co., Ltd.: London, 1923.

6334. TRUE, A. C. The services of American agricultural colleges. Ann. Amer. Acad. Polit. Soc. Sci. 117²⁰⁶: 88-93. 1925.

CYTOLOGY

GILBERT M. SMITH, *Editor*

(See also in this issue Entries 7220, 7233, 7234, 7242, 7265, 7283, 7305, 7331, 7336, 7434, 7440, 7451, 7453, 7503, 7524, 7526, 7602, 7617, 7632, 7659, 7688, 7764, 7769, 7773, 7774, 7775, 7776, 7832, 7876, 7877, 7900, 7929, 8179, 8251, 8256, 8257, 8284, 8289, 8299, 8400, 8361, 8377, 8402, 8432, 8482, 8498, 8518, 8524, 8526, 8527, 8553, 9166, 9236, 9239, 9432, 9454, 9493)

6335. ABELE, K. Zur Kenntnis der Kernteilungsperiodizität in den Wurzeln. [Mitotic periodicity in roots.] Bot. Archiv. 11: 471-474. 1925.

6336. ALBERTI, W., UND G. POLITZER. Über den Einfluss der Röntgenstrahlen auf die Zellteilung. [The effect of Röntgen rays on cell division.] Arch. Mikrosk. Anat. 100: 83-109. 3 fig. 1924.—*Salamandra maculosa* larvae, Triton larvae and the epithelium from the cornea of Urodel larvae were used. These were subjected to the rays for various periods and finally fixed in standard fixing solutions after varied periods of radiation. The first, the so-called primary effect, is the cessation of mitosis for varying periods, the time of these variables being determined by the strength of the rays. The secondary effect is the resumption of mitoses, all of which are abnormal in several ways, but chiefly characterized by the production of extra nuclear nuclei originating from chromosomes lagging on the spindle, pycnosis, and false amitotic figures. A bibliography is provided.—*H. C. Sands.*

6337. ALBERTI, W., UND G. POLITZER. Über den Einfluss der Röntgenstrahlen auf die Zellteilung. II. Mitteilung. [Influence of Röntgen rays on cell division.] Arch. Mikrosk. Anat. 103: 284-305. 27 fig. 1924.—Pieces of the cornea from Triton larvae were cut, after various treatments with Röntgen rays, and fixed in Bouin's fluid, in serial sections. The first effect of the rays causes a diminution of the mitoses followed by an interval (6 hours) of no mitoses. A secondary effect is apparent by the resumption of cell divisions which show a high percentage of abnormal figures. Pycnoses, false amitosis, so-called bridge-building, are common and directly proportional to the duration of radiation, as is also the duration of the rest interval. Radiation during anaphase leads to extra-nuclear nuclei. A strong radiation leads to abnormal segmentation of the spireme and fragmented chromosomes. The chromatic substance itself is less affected than is the regulatory system of karyokinesis. A short literature list is given.—*H. C. Sands.*

6338. ALTMANN, STELLA, C. A. ELLERY, AND E. W. MAVIS. The chromosomes of four species of marsupials. *Quart. Jour. Microsc. Sci.* 69: 463-467. 1925.—A study is made of various chromosomes in the 4 following species: *Trichosurus vulpecula*, *Pseudochirus peregrinus*, *Phascolumys mitchelli*, and *Protorous tridactylus*.—C. S. Hoar.

6339. BAGCHEE, K. Cytology of the Ascomycetes. *Pustularia bolarioides* Ramsb. I. Spore development. *Ann. Bot.* 39: 217-266. 1925.

6340. BANNIER, J. P. Cytological investigations on apogamy in some elementary species of *Erophila verna*. *Proc. Roy. Acad. Sci. Amsterdam.* 26^{5/6}: 349-356. 1923.

6341. BARANOV, P. Das Verhalten des Nucleolus von *Galtonia candicans* während der Reduktionsteilung. [The behavior of the nucleole of *G. candicans* during the reduction division.] *Ber. Deutsch. Bot. Ges.* 43: 483-489. 1 pl. 1925.

6342. BAUER, ERWIN. Über Förderung der Zellteilung mittels der Verminderung der Oberflächenspannung des umgebenden Mediums. [Promotion of cell division by means of a diminution in the surface tension of the surrounding medium.] *Arch. Mikroskop. Anat.* 101: 541-557. 5 fig. 1924.—Paramoecia are suspended in several concentrations of sodium taurocholate. They change form, flatten and dissolve in proportion to the concentration. Eggs of *Ascaris* are used in order to prove the assumption that cell division represents work against surface tension and that therefore a lowering of the surface tension should stimulate cell division because the more the resistance to the division effort is lessened the more the surface tension is lowered. These are suspended in tributyrac acid glycerine ester. Eggs from the other branch of the uterus were placed in water and used as a control. The tables show greater numbers of cell divisions and blastules in the salt solution than in the water suspensions. Haberlandt's wound-hormones are explained as surface tension phenomena. From these results, the hyperplasias obtained by Petri and by Magnus on injecting plants with sodium taurocholate might easily be explained. A few references are given.—H. C. Sands.

6343. BĚLĚR, K. Neuere Untersuchungen über Geschlechtschromosomen bei Pflanzen. [New studies on sex chromosomes in plants.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 35: 172-175. 1924.

6344. BĚLĚR, K. Zytologie von *Actinophrys sol.* [Cytology of *Actinophrys sol.*] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 27: 263. 1922.

6345. BELLING, J. Chromosomes of *canna* and *Hemerocallis*. *Jour. Heredity* 16: 465-466. 1925.

6346. BELLING, J. Fracture of chromosomes in rye. *Jour. Heredity* 16: 360. 3 fig. 1925.

6347. BELLING, JOHN. On counting chromosomes in pollen-mother cells. *Amer. Nat.* 55: 573-574. 1921.

6348. BELLING, J. Production of triploid and tetraploid plants. *Jour. Heredity* 16: 463-464. 1925.

6349. BHATTACHARYA, D. R., AND F. W. ROGERS. The Golgi body in the erythrocytes of the Sauropsida. *Quart. Jour. Microsc. Sci.* 69: 357-360. 1925. The authors find what they consider Golgi bodies in erythrocytes of tortoises, birds, lizards, etc.—C. S. Hoar.

6350. BISHOP, ANN. A study of the micronuclei of *Spirostomium ambiguum major* during division. *Quart. Jour. Microsc. Sci.*, 69: 661-669. 1925.—A description is given of the various steps in cell division of the above *Spirostomium*.—C. S. Hoar.

6351. BLACKBURN, K. B. The chromosome basis of sex determination. *Proc. Univ. Durham Phil. Soc.* 7: 54-57. 1924.

6352. BLEIER, HUBERT. Chromosomenstudien bei der Gattung *Trifolium*. [Chromosome studies on *Trifolium*.] *Jahrb. Wiss. Bot.* 64: 604-636, 6 fig. 1925.

6353. BLEIER, H. Chromosomenzahlen und Kernvolumen in der Gattung *Trifolium*. [Chromosome number and nuclear volume in *Trifolium*.] *Ber. Deutsch. Bot. Gesell.* 43: 236-238. 1925.

6354. BOBILIOFF, W. Een bijdrage tot de cytologie der meklsapvaten von Hevea. [Cytology of *Hevea latex*.] *Arch. Rubbercult. Nederl.-Indie* 9: 474-482. 1925.

6355. BOHMIG, L. Die Zelle (Morphologie und Vermehrung). [The cell (Morphology and reproduction).] 158 p. Vereinigung wissenschaftl. Verleger: Berlin und Leipzig, 1921.

6356. BOUYGUES, H. Contribution à l'étude comparative due chondriome des cellules

animales et végétales. [A comparative study of the chondriome in animal and plant cells.] Actes Soc. Linn. Bordeaux 76: 5-166. 1924 [1925].

6357. BROTHERTON, W. Gamete production in certain crosses with "rogues" in peas. Jour. Agric. Res. 28: 1247-1252. 1924.

6358. BUCHHOLZ, J. T. The embryogeny of *Cephalotaxus fortunei*. Bull. Torrey Bot. Club 52: 311-324. 1 pl. 1925.

6359. CARRUTHERS, D. The somatic mitoses in *Hyacinthus orientalis* var. *albulus*. Arch. Zellforsch. 15: 370-376. 1921.

6360. CHAMBERLAIN, CHARLES J. Comparative morphology of cytoplasm and chromatin. Bot. Gaz. 80: 203-212. 3 fig., 1 pl. 1925.—From his studies of the cytoplasm of cycad eggs, particularly *Ceratozamia mexicana*, *Dioon edule* and *Stangeria paradoxa*, and of the chromatin in mitoses in root tips of *Tradescantia virginica*, *Vicia faba* and *Trillium grandiflorum*, the author concludes that both cytoplasm and chromatin are vacuolated and of essentially the same structure. The linin and chromomeres which constitute chromatin in some animals do not occur in plants studied by the author, and he predicts that theories of plant chromosome structure which cannot be reconciled with a vacuolated structure will have to be abandoned.—Wanda W. Brentzel.

6361. CHODAT, R. Sur la réalité de la chiasmotypie dans la cinèse de maturation de *Allium ursinum*. [On the reality of chiasmotypy in the maturation of *Allium ursinum*.] Compt. Rend. Soc. Phys. d'Hist. Nat. Genève 42: 4-8. 1925.

6362. CONARD, A. Sur la division suivie de caryocinèse dans les tissus cicatriciels de la tige de *Tradescantia virginica*. [Post-karyo kinetic division in cortical tissue of *Tradescantia virginica*.] Bull. Cl. Sci. Acad. Roy. Belgique 11⁵: 731-739. 1925.

6363. CONARD, A. Sur un nouveau mode de formation de la membrane dans les tissus cicatriciels d'une feuille. [A new method of membrane formation in wound tissues of a leaf.] Bull. Cl. Sci. Acad. Roy. Belgique 8: 531-541. 13 fig. 1922.

6364. DARLINGTON, C. D. Chromosome studies in the Scilliae. Jour. Genetics 16: 237-251. 1925.

6365. FINK, B. Some considerations of protoplasm. Ohio Jour. Sci. 25: 99-113. 1925.

6366. FINN, WLADIMIR W. Male cells in Angiosperms. I. Spermatogenesis and fertilization in *Asclepias cornuti*. Bot. Gaz. 80: 1-25. 2 fig., 3 pl. 1925.—True male cells with cytoplasm were found, which possessed tail-like projections. The male cytoplasm differed considerably from the cytoplasm of the pollen grain in which they appeared. In fertilization no male cytoplasm was observed to enter the egg. The sperm nuclei are spherical.—B. W. Wells.

6367. FISCHER, ALBERT. Beitrag zur Biologie der Gewebezellen. Eine vergleichend-biologische Studie der normalen und malignen Gewebezellen in vitro. [Contribution to the biology of tissue cells. A comparative biological study of normal and malignant tissue cells in vitro.] Arch. Mikrosk. Anat. 104: 210-259. 20 fig. 1925.—Normal fibroblasts are incapable of proliferation in vitro if individual cells are isolated from one another. Cell division cannot proceed except when the several individuals maintain proper protoplasmic connections. Fibroblast colonies in vitro show alternations of phases, one having many mitoses; the alternate, few or none. Their relationships point to the integrity of the cell-individuals. The fibroblast culture must be considered as a culture of regenerating connective tissue instead of a culture of individual fibroblasts. It has been shown, also, that the direct protoplasmic connections between individual cells play a leading rôle in other tissue functions. For example: The contracting stimulus in the heart muscle is only conveyed by means of protoplasmic connections; failing such connections the contraction of the tissue as a whole fails. A growth-union between heterologous embryo heart fragments does not occur, hence no synchrony or simultaneous contractions of chicken heart and goose heart occurs. Epithelial cells do not lose their epithelial character by long culture in vitro in the same way that fibroblasts lose their special character. Isolated normal epithelial cells in connection with fibroblasts do not live and cannot divide except in contact with other epithelial cells. Again, fibroblasts only proliferate when in contact with other fibroblasts. For certain malignant tissues (e.g., Peyton-Rouss chicken sarcoma) it was found that isolated and scattered sarcoma

cells can divide and proliferate and give rise to colonies of sarcoma tissue, a capacity which normal cells do not possess. Pure cultures of the latter are easily obtained. Sarcoma cells divide in such a way as to simulate a simple constriction process. Malignant tumor cells isolated from colonies retained their malignant character after having arisen by cell division through indefinite generations. A bibliography is provided.—*H. C. Sands.*

6368. GATENBY, J. BRONTÉ. The cytoplasmic inclusions of the germ-cells. VII. The modern technique of cytology. *Quart. Jour. Microsc. Sci.* 64: 267-301. 1920.

6369. GATENBY, J. BRONTÉ. The cytoplasmic inclusions of the germ cells. Part X. The gametogenesis of *Saccocirrus*. *Quart. Jour. Microsc. Sci.* 66: 1-48. 4 pl. 1922.

6370. GATENBY, J. BRONTÉ. A reinvestigation of the spermatogenesis of *Peripatus*. *Quart. Jour. Microsc. Sci.* n.s. 69: 629-643. 1925.—He finds Montgomery's work of 1911 entirely confusing, due to his use of old technique.—*C. S. Hoar.*

6371. GATES, R. R. Present problems of *Oenothera* research. Memorial Publ. in honor of J. G. Mendel, etc. *P.* 135-146. 1925.

6372. GATES, R. RUGGLES, AND E. M. REES. A cytological study of pollen development in *Lactuca*. *Ann. Bot.* 35: 365-398. 4 pl. 1921.

6373. GERTZ, OTTO. Laboratorietekniska och mikrokemiska notiser: 8. Om strukturen af starkeleskorn. [Technical and microchemical notes: 8. Structure of starch grains.] *Bot. Notiser* 1922: 113-122. 1922.

6374. GILIO-TOS, ERMANNO. Entwicklungsmechanische Studien. IV. Die inäquale und partielle Furchung. [Development mechanism studies. IV. Unequal and partial furrowing.] *Arch. Mikrosk. Anat.* 100: 517-541. 16 fig. 1924.

6375. GOLDSTEIN, BESSIE. A study of progressive cell plate formation. *Bull. Torrey Bot. Club.* 52: 197-219. 11 fig., 6 pl. 1925.—Division figures in cells already somewhat vacuolated were studied in tobacco. A review is given of findings and opinions of recent workers on cell plate formation. The author recognizes 5 conditions of cell content relations to cell plate formation: (1) "Cell division in small cells with relatively dense cytoplasm and no large vacuoles. . . . The growth of the cell plate in such cases involves only a simple widening out of the central spindle with the addition of relatively few new fibers to form ultimately a biconvex lens-shaped phragmoplast." (2) "Cell division in somewhat larger cells containing several vacuoles. The nucleus lies in a dense mass of cytoplasm that occupies the central region of the cell. . . . Such a division process differs in no essential features from that in embryonic cells." (3) "Cell division in mature parenchymatous cells with a single central vacuole. Through this central vacuole extend cytoplasmic strands across the cell lumen connecting various regions of the primordial utricle." Two sorts of cell plate formation occur: "The nuclear division figure lies in the center of the cell, so that cell plate formation will go on progressively outward to the lateral walls of the cell," or "The nuclear division figure is eccentrically placed in the primordial utricle on one side of the cell, so that in cell plate formation one portion of the phragmoplast reaches the adjacent proximal lateral wall very soon, while the remaining arc of the fibrillar complex must develop peripherally across the entire cell." (4) "Cell division in elongated cells containing a large central vacuole with practically no transverse cytoplasmic strands." Division may be transverse by the spindle arranging itself in a diagonal mass of cytoplasm or may be longitudinal by the spindle being drawn away from the parietal layer into the cell lumen, but oriented for longitudinal division. (5) "Cell division in such elongated elements as the cambial initials," in which "longitudinal division of the cell takes place by means of a very extended growth of the cell plate through the great length of the cell." In all these cases "we have a peripheral development of the cell plate formed from the original fibers of the central spindle."—*P. A. Munz.*

6376. GRAY, J. The mechanism of cell division. II. Oxygen consumption during cleavage [in *Echinus esculentos*]. *Proc. Cambridge Phil. Soc.* 1: 225-236. 1925.

6377. GURWITSCH, ALEXANDER. Die Natur des spezifischen Erregers der Zellteilung. Unter Mitwirkung der Herrn Stud. Nat. N. Grabje und Salkind. [The nature of the specific exciters of cell division.] *Arch. Mikrosk. Anat.* 100: 11-40. 11 fig. 1923.

6378. GURWITSCH, ALEXANDER, UND LYDIA GURWITSCH. Weitere Untersuchungen über

mitogenetische Strahlungen. [Further investigation on biologic rays.] Arch. Mikrosk. Anat. 104: 109-120. 1 fig. 1925.—Onion root tips inducted by the juxtaposition of very young tadpole heads gave very positive results. The interesting fact developed is that the ray bundles emanating from the head are as sharply limited and of the same small diameter as those coming from a root-tip. Similar results were obtained with fresh emulsions of tadpoles diluted with Ringer's solution and applied by introducing the material in capillary glass tubes. A figure of the apparatus is provided.—*H. C. Sands.*

6379. GURWITSCH, ALEXANDER, UND NINA GURWITSCH. **Fortgesetzte Untersuchungen über mitogenetische Strahlung und Induktion.** [Further investigations on mitogenetical radiation and induction.] Arch. Mikrosk. Anat. 103: 68-79. 2 fig. 1924.—The results of induction show that propagation by cell division is not restricted to a hormone factor alone, as held by Haberlandt, since many more cells are capable of division than those actually in division. By induction, the percentage differences between the proximal and distal regions may amount to as much as 50%. The radiation is a factor quite independent. Induction takes place through air as a medium but pieces of onion skin interposed between the 2 roots were opaque to the rays so that negative results were obtained. If the 2 roots touched, mitotic zones of 180 μ were obtained, but from 2-40 mm. separation showed 60-70 μ zones. Dispersion of the parallel ray bundles occurred so that only those rays perpendicular to a small zone of the root cap emerged, probably representing a surface $\frac{1}{16}$ of the root thickness. Living tissue used as a screen between the roots was found to absorb the rays and therefore was opaque. While such media may be transparent to light waves, they may not necessarily be so to mitogenetic waves, which suggests that the latter are shorter than light waves. Apparatus, methods and detailed discussion are given.—*H. C. Sands.*

6380. GURWITSCH, LYDIA. **Untersuchungen über mitogenetischen Strahlen.** (Mit einem Beitrag von NINA GURWITSCH.) [Investigations on mitogenetic rays. (With a contribution by NINA GURWITSCH).] Arch. Mikrosk. Anat. 103: 483-489. 1 fig. 1924.—From chloral hydrate treated roots it is believed positive results may be obtained, thus throwing light on the problem of the origin of biologic rays emanating from onion root tips. An hypothetical energy source was presumably inactivated by proper application of the narcotic, so that by induction, negative results were obtained, as expected. Histologically determined, the source of the radiate energy is a funnel, conically layered by tracheids, and embedded in the root from which the bundle system progresses. This inverted cone is provided with 2 kinds of cells: one, a small plasma-rich layer in contact with the inner tracheid funnel contour; the other, a central case of cells running to the tip of the root. This core is topped by a giant cell rather poor in cytoplasm. The outside contour of the tracheid funnel is covered with an exceptionally regular cell layer. The perilem and dermatogen originate from small cells on the outside of the latter cushion. This structure is homologized with the lighting organ of some insects in such a way that the outer cushion is somewhat suggestive of the syncytial mass which approximates a reflector. The inner layer suggests a photogenic layer nourished by tracheids the peroxidase on the walls of which seems significant. The origin of these rays may probably be explained through oxidation processes.—*H. C. Sands.*

6381. GUYÉNOT, EMILE. When does the reducing division occur? Compt. Rend. Soc. Phys. Hist. Nat. Genève 38: 53-55. 1 fig. 1921.

6382. HABERLANDT, G. **Zur Embryologie und Cytologie von Allium odorum L.** [The embryology and cytology of Allium odorum L.] Ber. Deutsch. Bot. Ges. 43: 559-564. 1925.

6383. HANCE, R. T. **The fixation of avian chromosomes.** Anat. Rec. 31: 87-92. 1925.

6384. HARVEY, LESLIE A. **On the relation of the mitochondria and Golgi Apparatus to yolk-formation in the egg-cells of the common earthworm, Lumbricus terrestris.** Quart. Jour. Microsc. Sci. 69: 293-316. 1925.—The yolk-nucleus is merely a mass of mitochondria which arises as a cap of threads over the nucleus and eventually becomes evenly spread throughout the cytoplasm. The Golgi apparatus consists of numbers of Golgi elements lying in the cytoplasm and never massed together. They are probably platelets or spheroids and never rods. They supposedly arise from the cytoplasm while the yolk arises from the protoplasm.—*C. S. Hoar.*

6385. HEILBRUNN, L. V. **Colloidal change and mitosis.** Arch. Mikrosk. Anat. 104:

313-316. 1925.—In discussing the tenets of Spek and Heilbrunn regarding viscosity of the protoplasm in sea urchin eggs, Heilbrunn maintains (1), that all agents which stimulate egg cells to division cause a gelation or coagulation, and (2) that all agents which prevent such gelation also prevent division of the egg. Speck believes the reverse to be true. A bibliography is provided.—*H. C. Sands.*

6386. HEITZ, E. Beitrag zur Cytologie von Melandrium. [A contribution to the cytology of Melandrium.] Zeitschr. Wissenschaftl. Biol. Abt. E (Arch. Wissenschaftl. Bot.) 1: 241-259. 1925.

6387. HEITZ, E. Einige Bemerkungen über Chloroplastenteilung und Chloroplastengröße. [Some remarks on chloroplast division and chloroplast size.] Biol. Centralbl. 45: 179-186. 1925.

6388. HEITZ, E. Unregelmässigkeiten bei der Reductionsteilung von Melandrium album. [Irregularities in the reduction divisions of M. album.] Ber. Deutsch. Bot. Ges. 43: 77-80. 1925.

6389. HENNEGUY, L. F. Vie cellulaire; éléments de cytologie. [Cellular life; elements of cytology.] 160 p. Payot: Paris, 1923.

6390. HERSZLIK, A. Les vacuoles à tannoides de certaines variétés du Haricot (*Phaseolus vulgaris*). [Tannin vacuoles in certain varieties of beans.] Bull. Acad. Sci. Cracovie. 3-4 B: 315-323. 1 pl. 1925.

6391. HOJIMA, H. On the meiosis and the chromosome numbers in different races of *Solanum melongena* L. Bot. Mag. [Tokyo] 39: 119-123. 1925.

6392. HORNING, E. S. The mitochondria of a protozoan (*Opalina*) and their behavior during the life-cycle. Australian Jour. Exp. Biol. & Med. Sci. 2: 169-171. 2 pl. 1925.

6393. JEFFREY, E. C., AND G. G. HICKS. The reduction division in relation to mutation in plants and animals. Amer. Nat. 59: 410-426. 1925.

6394. KAUFMANN, B. P. The existence of double spiral chromatin bands and of a "bouquet" stage in *Tradescantia pilosa* Lehn. Amer. Nat. 59: 190. 1925.

6395. KERR, J. G. Cytology and evolution. Nature 114: 949. 1924.

6396. KHRISTOV, M. Cytologische studien über die gattung *Nicotiana*. [Cytological studies on *Nicotiana*.] Godn. Sofiisk. Univ. V, Agron. Fakul. 3: 37-86. 1925.

6397. KIHARA, H. Chromosomes of *Rumex acetosella*. Bot. Mag. Tokyo 39: (353)-(361). 1925.

6398. KLEBAHN, H. Weitere untersuchungen über die Gasvacuolen. [Further studies on gas vacuoles.] Ber. Deutsch. Bot. Ges. 43: 243-259. 1925.

6399. KOMURO, H. Die physiologischen und zytologischen Veränderungen durch die harten und weichen Röntgenstrahlen auf *Vicia faba* und *Pisum sativum*. [Physiological and cytological changes induced by Röntgen rays in *V. faba* and *P. sativum*.] Bot. Mag. Tokyo 39: (223)-(282). 1925.

6400. KOSHUKHOV, Z. A. Karyotypische Eigentümlichkeiten der kultivierten Cucurbitaceae. [Mitotic characters of cultivated Cucurbitaceae.] (In Russian.) Bull. Appl. Bot. 14: 89-96. 1925.

6401. KREMER, J. Studien zur Oogenese der Säugetiere nach Untersuchungen bei der Ratte und Maus. [Studies on oögenesis in rats and mice.] Arch. Mikrosk. Anat. 102: 337-356. 14 fig. 1924.—White mouse graafian follicles fixed in Flemming's solution and similar parts from the white rat in Zenker's solution, constituted material for the study. The attempt to identify the heterochromosomes in the egg of both forms failed and could not be followed through the first division spindle phenomena. The chromosome count was fixed at 20, which agrees with some authors and not with others. The yolk nuclei were observed to be nucleolar extrusions into the cytoplasm from the egg-nucleus. A very extensive bibliography is provided.—*H. C. Sands.*

6402. KUWADA, Y. On the number of chromosomes in maize. Bot. Mag. Tokyo 39: 227-234. 1925.

6403. KUWADA, Y. On the staining reaction of the spermatozooids and egg cytoplasm in *Cycas revoluta* (Prelim. note). Bot. Mag. Tokyo 39: (128)-(132). 1925.

6404. LATTER, JOAN. A preliminary note on the pollen development of *Lathyrus odoratus*. British Jour. Exp. Biol. 2: 199-210. 1925.

6405. LAVIALLE, P. Sur le sac embryonnaire des Dipsacées. [On the embryo-sac of Dipsaceae.] *Compt. Rend. Acad. Sci. [Paris]* 180: 1127-1129, 1176-1178. 1925.

6406. LEE, ARTHUR B. The chromosomes of *Paris quadrifolia* and the mechanism of their division. *Quart. Jour. Microsc. Sci.* 68: 1924.—In a previous paper the author concluded that the chromosomes consist of a chromatic cylinder which, at certain stages, is alveolated, as described by Gregoire and his pupils, and not furnished with an enveloping spiral fiber as described by Baranuki and Bonnevie. It was also supposed that their longitudinal division is brought about by the confluence into a single axial lumen, of a row of alveoles formed in them during the prophase. Besides the sheath of Janssens, animal chromosomes show a certain periaxial spiral differentiation, and their division is brought about by the infolding and close approximation of their 2 limbs at the teleophase and the subsequent separation of these seemingly longitudinal moities at the next metaphase. The present paper shows that *P. quadrifolia* conforms to the anomal type.—*C. S. Hoar*.

6407. LEPESCHKIN, W. W. Ueber die aggregatzustand der protoplasmatischen Faden und Stränge der Pflanzenzellen. [On the aggregation of protoplasmic fibers and strands in the plant cell.] *Ber. Deutsch. Bot. Ges.* 43: 21-26. 1925.

6408. LEVINE, M. A comparative cytological study of the neoplasms of animals and plants. *Jour. Cancer Res.* 9: 11-49. 1925.

6409. LEWITSKY, G. Die Chondriosomen in der Gonogenese bei *Equisetum palustre* L. [Chondriosomes in gonogenesis of *E. palustre*.] *Zeitschr. Wissenschaftl. Biol. Abt. E (Arch. Wissenschaftl. Bot.)* 1: 301-316. 1925.

6410. LJUNGBÄHL, H. Zur Zytologie der Gattung *Papaver*. [Cytology of the genus *Papaver*.] *Svensk. Bot. Tidskr.* 16: 103-114. 1922.

6411. LOTS, J. P. Die chromosomengestalten der Organismen. [The chromosome shapes in organisms.] *Genetica* 4: 1-22. 1922.

6412. LUDFORD, R. J. The Golgi apparatus. *Sci. Prog.* 16: 644-648. 2 fig. 1922.

6413. LUDFORD, REGINALD J. Cell organs during keratinization in normal and malignant growth. *Quart. Jour. Microsc. Sci.* 68: 27-61. 1924.—Cytological processes occurring during keratinization are essentially the same for both normal and malignant cells. The only observable morphological difference is the difference in cell polarity, as denoted by the mode of distribution of the cytoplasmic organs in the cytoplasm.—*C. S. Hoar*.

6414. MALKAWA, TOKUJIRO. On the phenomena of sex transition in *Arisaema japonicum* Bl. *Jour. Coll. Agric. Hokkaido Imp. Univ.* 13: 217-305. 9 fig., 1 pl. 1924.

6415. MANGENOT, G. Les neoplasmes des végétaux. [The neoplasms of plants.] *Paris Med.* 47: 159-166. 1923.

6416. MARTENS, P. Le cycle du chromosome somatique dans le *Paris quadrifolia*. [The cycle of the somatic chromosome in *P. quadrifolia*.] *Bull. Cl. Sci. Acad. Roy. Belgique* 8: 124-129. 1 pl. 1923.

6417. MEYER, K. Über die Entwicklung des Pollens bei *Leontodon autumnalis* L. [Pollen development in *L. autumnalis*.] *Ber. Deutsch. Bot. Ges.* 43: 108-114. 1 pl. 1925.

6418. MEYER, K. I. Parthenogenesis bei *Thysanotus javanica* im lichte der Haberlandischen Anschauung. [Parthenogenesis in *T. javanica* in the light of Haberland's conception.] *Ber. Deutsch. Bot. Ges.* 43: 193-197. 1 fig. 1925.

6419. MICHAELIS, P. Zur Cytologie und Embryoentwicklung von *Epilobium*. [Cytology and embryology of *Epilobium*.] *Ber. Deutsch. Bot. Ges.* 43: 61-67. *Illus.* 1925.

6420. MJASSOJEDOFF, S. W. Über in vitro kulturen von Eifollikeln der Säugetiere. [Culture in vitro of mammalian egg follicles.] *Arch. Mikrosk. Anat.* 104: 1-23. 18 fig. 1925.—Epithelium from the large ovarian follicle of rabbits was cultured in somewhat diluted blood plasma or bone marrow extract and fixed by Zenker's formalin and Carnoy's solutions. It is intended to determine, for the egg follicle if possible, whether the manifold capacities of similar cells are due to inherent potential confined within each cell or whether such a capacity is specific for certain cells. The factors considered are phagocytosis, universal for the polyblasts and fibroblasts, as well as the capacity of the latter to form scar tissue. The follicle epithelium in vitro begins about the 3d day to undergo degeneration in certain cells. The remaining living cells show hypertrophy and associate closer together. Nuclear differen-

tiations disappear. Isolated groups of cells, dissected from the edges of a culture and infiltrated with fibrin, assume irregular elongate or spindle forms. In later stages, the epithelial character of this tissue is lost and it takes on a fibroblast-like resemblance. Sometimes the cells round up. The spindle forms and spheres are united by transition forms. While the fibroblast-like forms take up but small amounts of lithium carmine, the round forms ingest large amounts of it and under such circumstances can give rise to giant cells. The follicle epithelium in vitro may also show strong tendencies to passive phagocytosis. The objects of such activity are degenerated cells. Through fusions, syncytials may arise. Thus, in follicle epithelium the properties and potentials of epithelium and connective tissue are seen to be united. A bibliography is provided.—*H. C. Sands.*

6421. MOREAU, F. *À propos d'une note sur la formation des essences.* Bull. Soc. Bot. France 72: 985-987. 1925.—Response to a note of Mlle. Popovici. The author in his paper on the formation of volatile oils and resins in the glands of Houblon (1922, 1923) claimed that these substances arise directly in the cytoplasm. Moreover, he gives the following hypothesis: The mitochondrial material may be taken up by the protoplasm undergoing reactions preparatory to the formation of volatile oils; he supposes also that the mitochondrial lipoids, distributed in the protoplasm in amorphous form, may modify the permeability and permit the passage out of the cell of the volatile oils formed therein. But the point in question is only one of simple hypotheses. Mlle. Popovici has not seen the mitochondria disappear in the glands. With regard to the direct origin of the resin in the cytoplasm, Moreau holds to its confirmation again.—*J. Beauverie (transl.).*

6422. MÜNZER, FRANZ THEODOR. *Über die Zweikernigkeit der Leberzellen.* [The bi-nucleated condition of liver cells.] Arch. Mikrosk. Anat. 98: 249-280. 1923.—In the livers of several vertebrate classes, bi-nucleate cells often occur. It is characteristic for the livers of mammals and constantly averages 1-20% in any given species. The rodents show the highest percentages (20%), with man in an intermediary position (10%). Amphibians have small percentages (0.3-0.6%). Often one nucleus stains with a basic dye while the other takes an acid one, or one stains stronger than the other. The bi-nucleate condition arises by amitosis and the number varies with the age of the organism. A bibliography is presented.—*H. C. Sands.*

6423. NASSONOV, DIMITRY. *Das Golgische Binnennetz und seine Beziehungen zu der Sekretion.* [The Golgi net and its relation to secretion.] Arch. Mikrosk. Anat. 100: 433-469. 4 pl. 1924.

6424. NATH, V. Cell inclusions in the oögenesis of scorpions. Proc. Roy. Soc. London B 98: 44-58. 4 pl. 1925.

6425. NATH, VISHWA. Mitochondria and sperm-tail formation, with particular reference to moths, scorpions, and centipedes. Quart. Jour. Microsc. Sci. 69: 643-659. 1925.—The author reviews the condition of mitochondria and sperm-tail formation in these groups and makes the following original observations: (1) In *Oporabia*, *Smerinthus*, and *Pieris* the mitochondrial "*Nebenkern*" does not directly form the tail-sheath, but undergoes a progressive dwindling and ultimately disappears. The sheath-forming substance arises as a new substance in the chromophobic cavity round the *Nebenkern*. (2) The structure of the Lepidopteran mitochondrial *Nebenkern* is alveolar or a "plate work" and not a "spireme." (3) In the centipedes (*Lithobius forficatus*) the mitochondria form the tail-sheath directly.—*C. S. Hoar.*

6426. PAINTER, THEOPHILUS S. A comparative study of the chromosomes of mammals. Amer. Nat. 59: 385-408. 1 pl., 8 fig. 1925.—The available data on chromosome number, size and individuality in mammals are compared from the standpoint of evolution in relation to chromosome structure. In the Marsupalia the somatic chromosome numbers range in different species from 12 to 22 but all have approximately the same bulk of chromatin. In the Eutheria the range is from 44 to 60. Forty-eight is the most common number, being found in certain primates, Cheiroptera, and Insectivora and in all of these the individuality is very similar. It is suggested that this may be the primitive number for the Eutheria. The species with the larger numbers have more small chromosomes; those with the smaller numbers more large ones. XY elements have been demonstrated in most species and differ very little in

appearance in the different species. The author believes that fragmentation or end-to-end fusion of essentially the same chromosome equipment accounts for the numerical variations observed. Polyploidy appears not to have occurred, since the amount of chromatin is not materially increased and the sex chromosomes have not been duplicated in any species.—*Margaret M. Lesley.*

6427. PAINTER, THEOPHILUS S. The Y-chromosome in mammals. *Science* 53: 503-504. 1921.

6428. PALM, B. T. Embryological notes on tropical Compositae 1. *Ann. Jard. Bot. Buitenzorg* 34: 188-194. 1925.

6429. PARMENTER, C. L. The chromosomes of parthenogenetic frogs and tadpoles. *Jour. Gen. Phys.* 8: 1-20. 1925.

6430. PEROTTI, R. Di alcune notevoli alterazione del plasma cellulare. [Some noteworthy alterations of the cellular plasm.] *Boll. Mens. Inform. Notiz. R. Staz. Patol. Vég. Roma* 5: 67-72. 1 fig. 1924.—The author continues his studies on the physiological action of the cyanide group upon plants. He worked with filaments of *Spirogyra*, immersing them in solutions of calcium cyanamide in various concentrations. A solution of calcium cyanamide in a concentration of 1 per thousand, produces plasmolysis in the alga. It is therefore necessary to avoid bringing the plant in contact with this concentration. The bacterial plasm is much more resistant to the poisonous action of the calcium cyanamide.—*R. Ciferri* (translated by J. M. Fogg, Jr.).

6431. PUJIALA, P. JAIME. Nota de tecnica microscopica sobre el fijador formol-cromo-acetico. [Technique of the formol-chrom-acetic fixative.] *Bull. Inst. Catalana d'Hist. Nat.* II. 5^a: 163-170. 1925.

6432. QUISUMBING, EDUARDO. Continuity of protoplasm in endosperm cells of *Diospyros*. *Bot. Gaz.* 80: 439-447. 2 fig., 2 pl. 1925.—Protoplasmic connections are demonstrated in the endosperm cells of *Diospyros discolor*, *D. ahernii*, *D. ebenaster*, and *D. kaki*. In the 2 first named species the connections may be observed without the aid of fixation and stain. A special technique is developed for demonstrating the nature of the connections. In *D. discolor* and *D. ahernii* they are very numerous and throughout the unpitted cell walls, while in *D. kaki* and *D. ebenaster* they are few, restricted, and grouped at the walls. They occur singly, or in groups of 2, 3, 4, 5, or 6, and are thicker when single and usually thinner in groups.—*Wanda W. Brentzel.*

6433. RADEMACHER, A. Die gametophyten von *Nipa fruticans* und *Actinophloeus macarthurii* Becc., sowie ein Versuch die Systematik der Angiospermen durch die haploide Generation zu ergänzen. [The gametophytes of *N. fruticans* and *A. macarthurii*, and taxonomic investigation of Angiosperms based on the haploid generation.] *Ann. Jard. Bot. Buitenzorg* 35: 1-54. 1925.

6434. RAU, A. SUBBA, AND R. J. LUDFORD. Variations in the form of the Golgi bodies during the development of neurones. *Quart. Jour. Microsc. Sci.* 69: 509-517. 1925.—In spinal ganglia in chicks of 4 days the Golgi apparatus is in the form of a cluster of granules or rodlets, grouped around the centrosphere at 1 side of the nucleus. In 7-day chicks it has increased in size and begins to spread further around the nucleus. All ganglia cells have Golgi apparatus in this compact form during the early stages. Later the apparatus spreads out in the cytoplasm. It is suggested that the scattered form of the Golgi apparatus in adult ganglion cells is an expression of the high degree of metabolism existing therein.—*C. S. Hoar.*

6435. RAWIN, W. Weitere Beiträge zur Kenntnis der mitotischen Austrahlung und Induktion. [A further contribution to the knowledge of mitotic ray emanation and induction.] *Arch. Mikrosk. Anat.* 101: 53-56. 2 fig. 1924.—A confirmation of the results published by Gurwitsch intending to show that mitosis may be stimulated by induction. Onion and *Helianthus* root tips were held in place by capillary glass tubes at a distance of a few cm. from each other and subjected to induction. A greater number of mitoses occurred on the side nearest the inducing tip than on the side away from it. Onion tips induced with very young *Helianthus* tips gave negative results because a seedling whose mitotic energy is trifling is incapable of inducing mitosis in other tips. The results are plotted in 10 diagrams.—*H. C. Sands.*

6436. ROSEN, F. Zur Mechanik der indirekten Kernteilung. [The mechanics of indirect nuclear division.] Ber. Deutsch. Bot. Ges. 43: 211-217. 1925.

6437. RUMJANTZEW, A., UND E. WERMEL. Untersuchungen über den Protoplasmabau von *Actinosphaerium eichornii*. [Investigations on the protoplasmic structure of *A. eichornii*.] Arch. Protistenk. 52: 217-264. 1 pl., 6 fig. 1925.—The authors describe the protoplasmic structure as observed in living material and in preparations with different methods of fixation and staining. The literature on the subject is reviewed, and 68 references are cited. The structures of the cytoplasm, the axopodia, fat droplets, carbohydrate inclusions, mitochondria, axopodial granules, granules of the pellicle and cortex, are discussed in detail, and methods of staining are mentioned for each.—*R. P. Hall*.

6438. RUSINOFF, P. G. Weitere Untersuchungen über mitogenetische Strahlen und Induktion. [Further investigations on biologic rays and induction.] Arch. Mikrosk. Anat. 104: 121-124. 1925.—In other experiments on this subject, an induction period of 3 hours was used. Here the time was shortened both for the period of induction and the time allowed the root tip to grow after induction, but before making sections and counting mitoses. The results are somewhat unsatisfactory, and must be ascribed to unfavorable weather conditions affecting the growth of the onion root tips, but it can be demonstrated that exposures of $\frac{1}{2}$ - $\frac{3}{4}$ hours give positive results.—*H. C. Sands*.

6439. SALKIND, S. J. Weitere Untersuchungen über mitogenetische Strahlen und Induktion. [Further investigations on mitogenetic rays and induction.] Arch. Mikrosk. Anat. 104: 116-120. 1925.—Inductions (onion root tips with tadpoles) treated with chloral hydrate or the pulp of such tadpoles thinned with the same agent gave negative results. The controls showed positive results, as given in the tables.—*H. C. Sands*.

6440. SANDS, H. C. A micro dissection of the pachytene threads of *Tradescantia virginica* L. with observations on some aspects of mitosis. Jour. General Physiol. 9: 181-189. 1925.

6441. SCHADOWSKY, A. E. Über die Entwicklung der Embryosacks bei *Panocratium maritimum*. [Development of the embryo-sac of *P. maritimum*.] Ber. Deutsch. Bot. Ges. 43: 361-365. 1 pl. 1925.

6442. SCHAEDE, R. Untersuchungen über Zelle, Kern und ihre teilung am lebenden Object. [Studies on cells, nuclei and their division based on living material.] Beiträge Biol. Pflanzen 14: 231-260. 1925.

6443. SCHNARF, K. Kleine Beiträge zur Entwicklungsgeschichte der Angiospermen V. Über zwei kritische Fälle der Endospermentwicklung (*Verbena* und *Triglochin*). [Notes on developmental history of Angiosperms V. Two critical cases of endosperm development (*Verbena* and *Triglochin*).] Oesterreich. Bot. Zeitschr. 74: 40-50. 1925.

6444. SCHRATZ, E. Vergleichende Untersuchungen an uni- und bivalenten Laubmoosen, nebst einem Anhang: Studien über die Natur der Bispaltigformigenstadien der Chloroplasten. [Comparative studies on uni- and bivalent leafy mosses, with a note on the nature of the fission stages in chloroplasts.] Biol. Centralbl. 44: 593-623. 1924.

6445. SCHÜKOWSKY, D. E. Die Beschaffenheit der Zelloberfläche als bestimmender Faktor des Zustandekommens der Zellteilung. [The property of the cell surface as a definite factor in cell division.] Arch. Mikrosk. Anat. 103: 499-503. 2 fig. 1924.—It is concluded that the properties of the surface of cells in onion root tips are provided with a mosaic structure as regards properties which, in turn, may be oriented either along the long-axis or the cross-axis of the cell. The interaction of the components of this mosaic structure in the cell surface accounts for that cell's individuality. Certain mathematical formulas of Gurwitsch's development are used here to determine some of these tendencies.—*H. C. Sands*.

6446. SCHÜRHOFF, P. N. Zur Cytologie von *Saxifraga*. [The cytology of *Saxifraga*.] Jahrb. Wiss. Bot. 64: 443-449. 1925.

6447. SHIMOTAMAI, N. A karyological study of *Brassica* I. Bot. Mag. Tokyo 39: 122-127. 1925.

6448. SINOTO, Y. Heterochromosomes in some dioecious plants. Bot. Mag. Tokyo 39: (305). 1925.

6449. SPEK, JOSEF. Kritisches Referat über die neueren Untersuchungen über den

physikalischen Zustand der Zelle während der Mitose. [A critical report on the new researches concerning the physical condition of the cell during mitosis.] Arch. Mikrosk. Anat. 101: 444-454. 1924.—A discussion of the recent literature on the physical properties of protoplasm with regard to colloidal condition, permeability, surface tension, fluidity, etc. A bibliography is given.—*H. C. Sands*.

6450. SPEK, JOSEF. Über den heutige Stand der Probleme der Plasmastrukturen. [Present status of the problem of protoplasmic structure.] Naturwissenschaften 13: 893-900. 5 fig. 1925.

6451. STENAR, A. H. Embryologische Studien: 1. Zur embryologie einiger Columniferen. 2. Die embryologie der Amaryllideen. [Embryological studies: 1. The embryology of some Columniferae. 2. The embryology of the Amaryllideae.] Thesis. 195 p., 1 pl., 274 fig. Uppsala, 1925.—Gives the cytology, including chromosome counts, embryosacs, embryos and endosperm. Some description of pollen mitosis is included. Bibliography.

6452. STOLZE, K. V. Die chromosomenzahlen der hauptsächlichen getreidearten. [Chromosome numbers in the principal cereals.] (Bibliotheca genetica, v. 8.) Borntraeger: Leipzig, 1925.

6453. SUGIURA, T. Meiosis in *Tropaeolum majus* L. Bot. Mag. Tokyo 39: 47-54. 1925.

6454. SUGIURA, T. On the meiotic division of pollen mother cells of *Polygomum Savatieri* Nakai. Bot. Mag. Tokyo 39: 291-297. 1925.

6455. SVENSSON, H. G. Zur embryologie der Hydrophyllaceen, Borraginaceen und Heliotropiaceen, mit besonderer Rücksicht auf der Endospermibildung. [The embryology of the Hydrophyllaceae, Borraginaceae and Heliotropiaceae, with special emphasis on endosperm formation.] Thesis. 176 p., 3 pl. Univ. Aarskrift: Uppsala, 1925.

6456. SWINGLE, W. W. Germ Cells of Anurans 1. The male sexual cycle of *Rana catesbeiana* larvae. Jour. Exp. Zool. 32: 235-331. 1921.

6457. TANJI, S. Chromosome numbers of wild barley. Bot. Mag. Tokyo 39: 55-57. 1925.

6458. TARASSEWITSCH, L. A. Ueber die Natur der Tuberkelbazillenkoernchen. [Nature of the granules in the tubercle bacillus.] Zeitschr. Tuberkulose 43: 375-378. 1925.—Staining the tubercle bacillus with Nile Blue led the author to conclude that the deeply staining granules are constant constituents of the cell and are directly concerned in the vital processes of the organism, perhaps playing a rôle in the reproductive processes.—*Louise Dosdall*.

6459. TERRY, J. Les divisions sporogoniques du *Plasmodiophora Brassicae* Wor. [Sporogonial divisions in *Plasmodiophora brassicae*.] Bull. Cl. Sci. Acad. Roy. Belgique 10: 18-25. 10 graphs. 1924.

6460. TISCHLER, G. Ein Beitrag zum Verständnis des Ceratiumsproblems bei *Melandrium*. [A contribution to the Ceratium problem in *Melandrium*.] Zeitschr. Wiss. Biol. Abt. E (Archiv Wiss. Bot.) 1³: 323-342. 1925.

6461. TISCHLER, G. Handbuch der Pflanzenanatomie. Allgemeiner Teil: Cytologie (Die Organe der Zelle). Band II: Allgemeine Pflanzenkaryologie. [Handbook of plant anatomy. General part: Cytology (the organs of the cell). Volume II: General plant cytology.] Edited by K. LINSBAUER. Lief. 6. P. 577-768; Lief. 7. P. xv + 769-899. Gebrüder Borntraeger: Berlin, 1922.

6462. TISCHLER, G. Studien über die Kernplasmarelation in Pollenkörner. [Studies on the nucleo-cytoplasmic relationship in pollen grains of *Cassia* and *Primula*.] Jahrb. Wiss. Bot. 64: 121-168. 1924.

6463. WALKER, C. E. The meiotic phase in *Triton* (*Molge vulgaris*). Proc. Roy. Soc. London B 98: 29-43. 9 pl. 1925.—In both the 1st and 2nd somatic mitoses preceding reduction division a telophasic split of the daughter chromosomes is described. The semivital threads reunite during prophase following such split, to be separated again at metaphase in mitosis. In reduction, however, the reorganized univalents pair laterally, for a time, then separate, save at the ends. Very definite individual chromosome forms appear during prophase of the 1st meiotic division. The 1st meiotic division is regarded as the reducing one. There are 24 somatic chromosomes.—*P. B. Sears*.

6464. VODRÁŽKA, O. O degeneraci buněčných jader při tvorbě dřeva jehličnatých stromů. [Degeneration of nuclei in coniferous wood.] Preslia 2: 148-158. 1 pl. 1923.

6465. VOSS, HERMANN. Studien zur künstlichen Entwicklungserregung des Froscheies. II. Experimenteller Beitrag zur künstlichen Entwicklungserregung des Froscheies durch mechanische Einwirkung. [Studies on artificially stimulated development in frog eggs. II. An experimental contribution to the artificial stimulation of frog egg development by mechanical means.] Arch. Mikrosk. Anat. 98: 121-128. 1923.—The unfertilized frog egg can be stimulated to parthenogenetic development not only by traumatic penetration of a needle (Bataillon), but also by other mechanical but non-traumatic means. The trauma as such is not the cause of the development but it is the pressure or the shaking which the egg receives from contact with the needle. The progress of complete development is stimulated by the chemical properties of the sperm rather than by its mechanical effect. A bibliography is provided—*H. C. Sands*.

6466. WARTH, G. Zytologische, histologische und stammesgeschichtliche Fragen aus der Gattung Fuchsia. [Cytological, histological and genetic problems in the genus Fuchsia.] Zeitschr. Indukt. Abstamm- u. Vererb. 38: 141-199. 1925.

6467. WEBER, FR. Plasmolyseform und Kernform funktionierender Schliesszellen. [Plasmolysis forms and nuclear form of functioning guard cells.] Jahrb. Wiss. Bot. 64: 687-701. 1925.

6468. WEBER, F. Plasmolyseform und protoplasma Viskosität. [Plasmolysis forms and protoplasmic viscosity.] Oesterreich. Bot. Zeitschr. 73: 261-266. 1924.

6469. WILSON, E. B. Protoplasmic systems and genetic continuity. Amer. Nat. 59: 481-496. 3 fig. 1925.

6470. WOLFSON, ALFRED M. Studies on aberrant forms of *Sphaerocarpos Donnellii*. Amer. Jour. Botany 12: 319-326. 2 pl., 5 fig. 1925.—Abnormal forms—"polycladous" males and females and "semi-sterile" males—isolated from a mixed culture of this species differ from the typical form in certain thallus characters and fail partially or completely to produce sexual organs. The chromosome number in all these aberrant types is 8, as in the typical form. The polycladous females possess the large X-chromosome of a typical female; and both types of males, the small Y-chromosome of a typical male. The aberrant condition is therefore probably not due to irregularities in chromosome distribution. Both types are referable to *S. donnellii*.—*E. W. Sinnott*.

6471. WOODGER, J. H. Observations on the origin of the germ-cells of the fowl (*Gallus domesticus*), studied by means of their Golgi bodies. Quart. Jour. Microsc. Sci. 69: 445-462. 1925.—The author finds continuity of primitive germ cells of genital ridge with those of the splanchnic mesoderm and with large cells of the blood stream. These are easily distinguishable by their size, pseudopodia, yolk-content, and Golgi bodies. He is not sure of their continuity with cells separated from the germ-wall endodermis in front of the primitive streak.—*C. S. Hoar*.

6472. YAMPOLSKY, C. Die Chromosomen in der männlichen Pflanze von *Mercurialis annua*. [Chromosomes in the staminate plants of *M. annua*.] Ber. Deutsch. Bot. Ges. 43: 241-253. 1925.

6473. YEATES, J. S. The nucleolus of *Tmesipteris tannensis* Bernh. Proc. Roy. Soc. London B 98: 227-244. 1 pl., 2 fig. 1925.—In this plant with a diploid chromosome count of about 200, the sporophyte number of nucleoli is about 6, the gametophyte number 3, with lower numbers arising by fusion. This is held to agree with general evidence that there are more nucleoli where chromosome counts are high than where low. During division the old nucleoli pass into the cytoplasm and new ones seem to be formed within the daughter nuclei, those of sister nuclei often corresponding in appearance and position. Fusion of nucleoli occurs at synapsis, followed by budding. The observations are taken to indicate that nucleoli are products of chromosome metabolism during the deeply staining stage, and that their subsequent fate varies with the metabolism of the organism.—*P. B. Sears*.

ECOLOGY

GEO. D. FULLER, *Editor*

(See also in this issue Entries 5826, 5836, 6045, 6057, 6091, 6095, 6111, 6116, 6136, 6144, 6149, 6153, 6159, 6161, 6168, 6172, 6179, 6714, 6745, 6769, 6774, 6783, 6810, 6822, 6824, 6830, 6859, 6886, 6901, 6902, 6903, 6929, 6952, 6961, 7004, 7020, 7080, 7083, 7094, 7154, 7155, 7171, 7191, 7391, 7698, 7990, 8038, 8136, 8183, 8185, 8202, 8216, 8218, 8234, 8237, 8243, 8258, 8261, 8265, 8272, 8273, 8292, 8301, 8305, 8308, 8309, 8311, 8315, 8327, 8329, 8330, 8341, 8342, 8348, 8349, 8350, 8351, 8353, 8354, 8371, 8374, 8378, 8381, 8382, 8392, 8396, 8400, 8401, 8409, 8411, 8413, 8414, 8420, 8422, 8423, 8439, 8454, 8475, 8520, 8612, 8662, 8862, 8971, 9082, 9115 9180, 9181, 9284, 9317, 9470, 9530, 9552, 9892, 9902)

GENERAL, FACTORS, MEASUREMENTS

6474. ANONYMOUS. *Flora Highdownensis*. Kew Bull. 1925: 1-6. 1925.—This paper notes success in creating a plant preserve in a chalky soil, 2 acres of the site being an abandoned chalk pit, a few miles west of Worthing, England, on a slope of the Sussex Downs, 250 feet above the sea, which it faces. A list of over 500 species of trees, shrubs, and herbs which thrive in the locality is given.—*T. J. Fitzpatrick*.

6475. ANONYMOUS. Proceedings of the meeting of the Botanical Society of Poona, held on the 28th October, 1925. Jour. Indian Bot. Soc. 5: 42-46. 1926.—Summaries are given of the papers read on: *Sclerospora* of *Pennisetum typhoideum*; Inflorescence of *Ricinus communis*; Grazing indicator plants; Adaptability of some Leguminosae to certain soils; Breeding experiments with *Oryza sativa*; and Dehydration of Deccan vegetables and fruits.—*Winfield Dudgeon*.

6476. ALECHIN, W. W. Ist die Pflanzenassoziation eine Abstraction oder eine Realität? [Is the plant association an abstraction or a reality?] Engler Bot. Jahrb. 60 (Beibl. 135): 17-25. 1925.

6477. ALECHIN, W. W. Wann und wo ist die Phytosoziologie entstanden? [When and how did phytosociology originate?] (Translated from the Russian by S. RUOFF.) Bot. Notiser 1924: 189-194. 1924.—Reviewing the development of this branch of science in western Europe the author claims that the concept was first expressed by J. Paczosky under the term "florology" in 1891 and the term "phytosociology" first used by P. Krylow, (Kryloff) of the University of Tomsk, in 1898. Even in Russia this publication seemed almost forgotten until mentioned in an address in Moscow, 1910, by W. Sukatschew who in his "Introduction to the study of plant communities," Petrograd, 1915, says "Phytosociology is now well established." —*Geo. D. Fuller*.

6478. ARNELL, HAMPUS WILHELM. Vegetationens årliga utvecklingsgång i Svealand. [The yearly progress of the vegetation in Svealand (Middle Sweden).] 79 p. Almqvist & Wiksells: Uppsala, 1923.

6479. ATKINS, W. R. G. The hydrogen ion concentration of some Indian soils and plant juices. Bull. Agric. Res. Inst. Pusa. 136. 1922.

6480. BAILEY, I. W. The anatomy of certain plants from the Belgian Congo, with special reference to myrmecophytism. Bull. Amer. Mus. Nat. Hist. New York 45: 585-621. 2 pl. 1921-1922.

6481. BAKER, GEORGE P. Plant hunting on Mount Ida, Crete. Gard. Chron. [London] 78: 170-171, 208. 1925.—It is a description of the general features of the region, with notes on the principal flowers seen.—*P. L. Ricker*.

6482. BANNERMAN, D. A. The Canary Islands. xv + 365 p. Illus. (part col.) Gurney and Jackson: London, 1922.

6483. BEAUVÉRIE, J., ET MARTIN-ROSET. Le marais des Echets (Ain) Contribution à l'étude de l'influence de la concentration en ions hydrogène sur la flore des terrains marécageux. [The marsh of Echet. Contribution to the study of the influence of hydrogen ion concentration on the flora of marshes.] Bull. Soc. Bot. France 72: 1045-1051. 1925.—This paper concerns the remains of a glacial lake ("mindélien") now transformed into a non-sphagnum peat bog with *Carex*. The pH has been observed in the different parts: Drainage canals, hollows with

Comarum, *Phragmites*, *Caricaceae*, peat in process of formation and peat removed after exploitation, alders, cultivated crops in the parts drained, etc. The restocking of the open spaces made by the masses of peat in deposits after exploitation are particularly studied from the point of view of pH. The pH noted and the plants enumerated constitute the data collected by the authors. They add their observations concerning the following facts: The growth of higher plants acidifies the medium. Certain plants, such as *Carex*, *Typha*, *Juncus*, *Phragmites*, etc., are able to grow in a neutral or alkaline medium, which favors the development of anaerobic microbes. This in turn gives rise to peat formation at the expense of the deeper plant parts. After the fermentation the peat becomes alkaline or neutral. Removed, it stocks itself easily with a less specialized flora like that of the contiguous marsh (because it is less exclusive in humid surroundings), which acidifies promptly the soil formed and renders it fit for the moor vegetation, for which will be substituted later the forest.—*Authors (translated)*.

6484. BENNING, E. Ueber Wasserstoffionkonzentration und die Biologie des Wassers. [The H-ion concentration and ecology of waters.] *Schriften Süßwasser- u. Meeresk.* 2: 317-319. 1924.

6485. BEVIS, JAMES F., AND H. J. JEFFERY. British plants; their biology and ecology. 2nd ed., rev. xii + 346 p. Methuen & Co.: London, 1920.

6486. BLANCHET, G. H. The northern plains north and east of Great Slave Lake including the source of the Coppermine River. *Canadian Field Naturalist* 39: 12-16, 30-34. 1925.—This is a general description of the region with notes on the vegetation and animal life.—*Geo. D. Fuller*.

6487. BOYSON, V. F. The Falkland Islands; with notes on the natural history by Rupert Vallentin. 414 p., 24 pl. Clarendon Press: Oxford; Oxford Univ. Press: London, 1924.—This contains an account of the history of the islands from 1592. The climate, industries and flora are also discussed.—*Geo. D. Fuller*.

6488. BREBENARU, I. Calendarul florilor. [Floral calendar.] *Revista Pădurilor* 36: 409-430; 37: 145-170. 1924.—The author gives the season of blooming of flowers for nature lovers.—*Emil Pop*.

6489. BROCKMANN-JEROSCH, H. Baumgrenze und Klimacharakter. [Timberline and climate.] *Beitr. Geobot. Landesaufnahme* 6: 1-255. 18 fig., map. Rascher & Cie: Zurich, 1919.

6490. BROCKMANN-JEROSCH, H. Die Vegetation der Schweiz. Erste Lieferung. The vegetation of Switzerland.] *Beitr. Geobot. Landesaufnahme* 4: 1-160. *Illus., map*. Rascher & Cie.: Zürich, 1925.—The author describes the soil and a part of the climate. The soils ("climatiques") are divided according to Lang into dry soils, humid soils, perhumid and alpine soils or "Sols nivaux." In Switzerland and throughout the Alps yellow soils, not yet mature, are widely spread. The relief and the soil are the most important factors in determining the vegetation. The influence of man is especially evident in the plains and in the valleys but it is also seen as far up the slopes as to the limits of the alpine meadows that are modified by pasturing. In the Swiss plains brown soils ("Braunerden") predominate and loess occurs in the larger valleys. In the Alps the podsol occurs, although the exact distribution of all the soil types in Switzerland is as yet imperfectly understood.—Precipitation is discussed in much detail. According to the distribution and quantity of rainfall 5 districts are distinguished: (1) the valley of the Saône and of the Trouée de Belfort; (2) the plain of the upper Rhine; (3) the Franco-Swiss Jura; (4) the central Swiss plain ("Mittelland"); and (5) the Alps. The Alps have the heaviest annual rainfall, amounting to 181.6 cm., while the mean of the plain is 108 cm. The distribution of the monthly means is shown in figures. The Juras and the western part of Switzerland have a maximum in June; central and eastern Switzerland, in July; and the Canton of Grisons, in August. Many profiles and a new rainfall map on a scale of 1: 600,000 accompany the work.—*J. Braun-Blanquet (translated)*.

6491. BROCKMANN-JEROSCH, H., UND M. BROCKMANN-JEROSCH. Jamaika. [Jamaica.] *Vegetationsbilder* 16⁵⁻⁶: 1-38. 12 pl. 1925.—This includes a discussion of the soil, climate and vegetation of Jamaica. The conditions on the leeward and windward sides of the Blue Mountains are contrasted and altitudinal zones are recognized. The vegetation illustrated

ranges from xerophytic scrub forest with such forms as *Prosopis juliflora*, *Acacia* spp., *Opuntia spinosissima* and *Cereus triangularis*, to strand vegetation including mangroves and rain forest with tree ferns.—*Geo. D. Fuller.*

6492. BÜLOW, K. v. Das Kieshofer Moor bei Greifswald. [The Kleshof bog near Greifswald.] (Diss. Greifswald 1921.) 38 p. Gustav Fock: Leipzig, 1922.

6493. BURKILL, I. H. The botany of the Abor Expedition. Records Bot. Surv. India 10¹: 1-154. Map. 1924.—The flora and vegetation of a region about the headwaters of the Brahmaputra River, in north-eastern India, are discussed.—*Geo. D. Fuller.*

6494. CAMUS, A. Les fleurs de marais, des tourbières, des cours d'eau, des lacs et des étangs. [Aquatic and swamp plants.] (Encyclopédie pratique de naturaliste V.) ix + 112 p. *Illus.* (96 col. pl.) P. Lechavalier: Paris, 1921.

6495. CARBONEL, J. Géographie botanique de la Commune de Thérondelles (Aveyron): Muscinées. [Phytogeography of Thérondels (Aveyron): Bryophytes.] Rev. Bryol. 52: 54-62. 1925.—The present paper supplements an article on the phanerogams of Thérondels, France, published in 1913. After giving a general account of the environmental conditions under which bryophytes flourish, the author groups the species of the region according to their respective habitats. He then lists the rarer species: 41 mosses, 3 peat mosses, and 8 hepatics.—*A. W. Evans.*

6496. CARPENTER, G. D. HALE. A naturalist in East Africa. Being notes made in Uganda, ex-German and Portuguese East Africa. 187 p., 31 pl., 3 maps. Clarendon Press: Oxford, 1925.—The insect life is given most attention but there are also notes on the vegetation.—*Geo. D. Fuller.*

6497. CHAVASTELON, ET A. LUQUET. Contribution à l'étude des conditions edaphiques des associations pastorales dans le Massif du Mont-Dore. [Edaphic conditions of pastoral associations in the Mont-Dore region.] Bull. Soc. Hist. Nat. d'Auvergne 1923: 25-31. 1923. (See also Bot. Absts. 13, Entry 3363.)

6498. CHIRIȚESCU-ARVA, M. Contribuțiuni la studiul acțiunii factorului vegetativ apă în agricultura noastră. [Contribution to the study of the ecological influences of water in our agriculture.] Buletinul Agric. 5 (Suppl.): 1-146. 10 pl., 19 fig. 1924.—This paper contains the results of 108 pot experiments with different races of spring wheat (*Triticum vulgare alborubrum* Keke., *T. vulgare lutescens* Al., *T. durum hordeiforme* Host., *T. durum erythromelan* Keke., and *T. durum melanopus* Al.) compared with "banater" winter wheat. The experiment had to do with the influence of increased water supply, and with that of the water optimum on the plants at different stages of development and in different growth periods. It was demonstrated that with increased water supply the plants as a whole developed more strongly but that their various organs reacted differently. The volume increase of the various organs of the wheat plant depends on the amount of water, whereas the maximum for the different organs is reached with a different water content of the soil; this in turn deviates from the water content on which depends the maximum for total growth. In white Turkish wheat (*T. durum melanopus*) the entire plants and their individual organs reach their maximum with a smaller percentage content of water and a greater concentration of soil than in the "banater" winter wheats. For example, the white Turkish wheat rapidly develops a strong root system with a smaller water content of the soil; in addition to significant gains in the early growth stages of the plant, this offers the possibility of better withstanding drought conditions appearing later. The water content during the first growth period determines the optimum development of the white Turkish wheats which are more xerophytic in character than the "banater" wheats. For the climatic conditions existing in Rumanian agriculture the author recommends the white Turkish wheats as most suitable.—*Emil Pop (transl.).*

6499. CLEMENTS, E. E. Ecogenesis. Carnegie Inst. Washington [D. C.] Year Book 24: 310-312. 1925.

6500. CLEMENTS, F. E. Phylogeny and classification of climaxes. Carnegie Inst. Washington [D. C.] Year Book 24: 334-335. 1925.

6501. CLEMENTS, FREDERIC E. Plant Indicators: The relation of plant communities to processes and practice. Carnegie Inst. Washington Pub. 290: xvi + 388 p. 1920.

6502. CLEMENTS, F. E., AND R. W. CHANEY. Principles and methods in paleo-ecology. Carnegie Inst. Washington [D. C.] Year Book 24: 341-342. 1925.

6503. CLEMENTS, F. E., AND E. S. CLEMENTS. *Changes of vegetation and climate.* Carnegie Inst. Washington [D. C.] Year Book 24: 333-334. 1925.

6504. CLEMENTS, FREDERIC EDWARD, AND EDITH SCHWARTZ CLEMENTS. *Rocky Mountain flowers: An illustrated guide for plant-lovers and plant-users.* 392 p., 47 pl. H. W. Wilson Co.: New York, 1920.—Brief descriptions are given of the more commonly occurring flowering plants of the Colorado Rockies. The numerous illustrations make it particularly useful to amateurs and of some assistance to the more scientifically trained botanists.—*Geo. D. Fuller.*

6505. CLEMENTS, F. E., AND FRANCES L. LONG. *Experimental pollination.* Carnegie Inst. Washington [D. C.] Year Book 24: 325-326. 1925.

6506. CLEMENTS, F. E., J. E. WEAVER, AND H. C. HANSON. *Nature and rôle of competition.* Carnegie Inst. Washington [D. C.] Year Book 24: 329-333. 1925.

6507. COZZI, C. *La funzione estetica del fiore in sede anomala.* [The esthetic function of flowers in abnormal habitats.] Bull. Soc. Bot. Italiana 1924: 138-146. 1924.—The present paper is based on the writings of Delpino, and calls the botanists' attention to the esthetic functions of flowers. Following an introduction in which the author discusses the interrelations of flowers and small animals, he passes in review the esthetic functions of the bracts, calyx, corolla and stamens, with many examples of plants from Italy and other lands.—*From Abst. by author.*

6508. DACHNOWSKI, ALFRED P. *Profiles of peatlands within limits of extinct glacial lakes Agassiz and Wisconsin.* Bot. Gaz. 80: 345-366. 3 fig. 1925.—The influence of topography, underlying mineral soils, and climate upon peat formation is discussed. It is held that "peat deposits are far from showing an exclusive relation to topographic conditions." No correlation between peat development and high or low lime content of the water is to be found; it is largely independent of the chemical content of the mineral soils. The quantity of water available is of major importance. The author warns against extensive drainage without taking into account the stratigraphic features of the peatlands. The present low areas should be preserved as water storage basins.—*B. W. Wells.*

6509. DEGENER, OTTO. *The gametophyte of Lycopodium cernuum in Hawaii.* Bot. Gaz. 80: 26-47. 4 pl., 2 fig. 1925.—On the island of Hawaii and under normal ecological conditions, 6 stations for the gametophytes and small sporlings of *Lycopodium cernuum* were discovered; on the island of Oahu and under similar conditions another station was found. On the sides of volcanic crevices near the crater of Kilauea, and under conditions of abnormal heat, thousands of gametophytes and small sporlings of *L. cernuum* were discovered. The gametophyte of *L. cernuum* grows far better under volcanic conditions with high temperature and abundant moisture than under conditions without volcanic heat. The conditions of heat and moisture best suited to the development of the gametophyte are injurious to the development of the sporophyte. Through a tentative theory of divergence, an attempt is made to account for the difference in environmental optima of the 2 generations. Such a theory of divergence may explain in part the gradual extinction of the cryptogamic flora of past geologic eras.—*Author.*

6510. DENIS, MARCEL. *Essai sur la végétation des mares de la forêt de Fontainebleau.* [Investigation of the vegetation of the ponds in the forest of Fontainebleau.] Ann. Sci. Nat. Bot. X, 7: 5-160. 3 pl., 13 fig. 1925.

6511. DOBRESCU, I. *Zonele climaterice ale grâului de toamnă în România.* (Vechiu. Regat). [The climatic zones of winter wheat in Rumania (Old Kingdom).] Buletinul Agric. 5: 33-53. 1 pl. 1924.—*Emil Pop.*

6512. DOMIN, KAREL. *Stanoviště, útvary a sdružení rostlinná jako základní pojmy sociologie.* [Habitats, plant associations and plant sociology.] Věda Přírodní 1: 11-13. 1924.

6513. DOMIN, KAREL. *Úvahy a studie o regionálním členění Čech shlediska geobotanického.* [An attempt to classify Bohemia into natural geobotanical districts.] Publ. Facult. Sci. Univ. Charles 9. 1-38. 1924.—The author divides the Republic of Czechoslovakia into 3 phytogeographic districts: (1) Sudeto-montane; (2) Pontic; and (3) Carpathian, the last not touching Bohemia. These districts are subdivided and are characterized by the presence or absence of typical genera. This is the first attempt at a phytogeographic description of the vegetation of Bohemia.—*From abst. in Preslia (transl.).*

6514. DOUGLASS, A. E. *Three rings and climate.* Sci. Monthly 21: 95-99. 1925.—Past

climate is studied from growth rings in western yellow pine. Rings for certain years are found to be nearly equal from Santa Fe, New Mexico to Fresno, California, indicating climatic similarity over an area 800 miles in longitude and 400 miles in latitude. The ring for 1851 is also found in beams of the kivas of the Pueblo Indians. Frequency and duration of drouth periods have been determined. Such records are used by the reclamation service in determining the size of reservoirs to be built to provide for possible future needs. The age of many of these trees (500-640 years) has been found by comparison of hundreds of trees. Individuals of *Sequoia gigantea* in the King's River country were examined and the oldest was found to be 3230 years. Rings of big trees in different groves can be identified as of the same year. Yellow pines give the history of drouth and rain periods for 500-600 years in Arizona. This gives climatic cycles which go far back of any instruments for measuring rainfall. Sun-spot cycles can also be detected and have been verified by old astronomical records. Study of the Sequoia bids fair to extend the record still further back.—*A. M. Taylor*.

6515. DU RIETZ, G. E. Studien über die Hohengrenzen der hochalpinen Gefasspflanzen im nördlichen Lappland. [The upper limits of alpine vascular plants in Lapland.] Veröff. Geobot. Inst. Rübel 3: 67-86. 4 fig. 1925.

6516. DU RIETZ, G. EINAR. Ueber das Wachsen der Anzahl der konstanten Arten und der totalen Artenanzahl mit steigendem Areal, in natürlichen Pflanzenassoziationen. [The increase in number of constant species and the total number of species with increasing area, in natural plant associations.] Bot. Notiser 1922: 17-36. 5 fig. 1922.

6517. DU RIETZ, G. EINAR. Zur Klarung einiger Historisch-pflanzensoziologischen Streitfragen. [The solution of some historical problems of phytosociology.] Bot. Notiser 1924: 425-439. 1924.—The origin and development of phytosociology as a special branch of botanical science is reviewed and the origin and use of the quadrat method and the laws of constancy are described. Priority in the use of the term "phytosociology" is given to Krylow. The investigations of Hart and Gleason and of Brockmann-Jerosch are mentioned as being particularly important in connection with the laws of constancy and the quadrat method.—*Hilda Joseph*.

6518. DU RIETZ, G. EINAR, UND H. GAMS. Zur Bewertung der Bestandestreue bei der Behandlung der Pflanzengesellschaften. [The importance of stability in plant associations.] Vierteljahrsh. Naturf. Ges. Zürich 69: 269-280. 1924.

6519. DU RIETZ, G. E., TH. C. E. FRIES, H. OSVALD, OCH T. A. TENGWALL. Gesetze der Konstitution natürlicher Pflanzengesellschaften. [The constitution of plant associations.] Flora och Fauna 7. (Meddel. Abisko Naturvetensk. Sta. 3.) This publication is a theoretical discussion of the idea and law of constants, the ratio of constants to the area, the results of the application of the law of constants to the association complex and to larger vegetation regions, etc.—*John W. Harshberger*.

6520. ENGLER, A. Die Pflanzenwelt Afrikas insbesondere seiner tropischen Gebiete. Ausführliche Schilderungen der Vegetationsverhältnisse des Tropischen Afrikas. [The vegetation of Africa with special detailed attention to that of the tropical zone.] Band 5. Heft 1. In: ENGLER, A., UND O. DRUDE. Die Vegetation der Erde 9: 1-341. W. Engelmann: Leipzig, 1925.—This is a continuation of the work of Engler published in this same series (1910-1921) on the phytogeography of Africa. It is the first of a series of detailed descriptions of phytogeographical regions and summarizes existing knowledge of the vegetation and flora of the Sudan and North-east Africa. The species, their habitats and the characteristics of the vegetation are discussed in detail and the divisions are related to the vegetation as a whole. The following phytogeographic regions are distinguished: (1) The North Africa-India Desert Region extending southward to about 12° N., including the Lake Chad and Kordofan regions; (2) the African Forest and Steppe Region comprising (a) The Sudan Steppe Province including the desert from Senegambia to the Ghasal district on the upper Nile, (b) the northern part of the West-African or Guinean Forest Province, including Guinea, South Nigeria, Kamerun, Ubangi and Uelle, (c) The Transition Province, between the 2 preceding, (d) The North-east and East Equatorial Highland and Steppe Province, including Yemen, Eritrea, Abyssinia, Somaliland, Gallaland, and the eastern equatorial highlands as far south as the Massais Steppes, (e) The Central African Mountain Province of the Kirunga volcano and Rubenzori.

These provinces are subdivided into "districts" and "sub-districts." Wherever sufficient material is available there is also a classification on physiognomic and ecologic bases. In the last chapter the author summarizes his opinion on the history of the African flora, regarding Africa as an old continent connected, during the Jurassic and Cretaceous periods, with South America on the one side and India and Australia on the other. At this early period there were mountain ranges with an alpine flora all around Africa. This influenced the amount of precipitation carried by southern winds much as at the present time. Hence there were then, as at present, formations ranging from hygrophilous to xerophilous. The drying out of a large lake in the Timbaktu, Chad and Kongo region occurred in the Quarternary and greatly influenced the present extension of the Guinean flora. The extension of the steppe formation has been influenced by animals and more recently by man. Birds and the wind have brought South African and boreal species to the mountains. Volcanic eruptions in the Tertiary causing land disturbances, resulted in climatic disturbances and the development of new species. The volume is an indispensable addition to Engler's contributions to the knowledge of the African flora.—*O. Stocker (translated).*

6521. FALGER, F. *Das Leben im Torf.* [Life in peat.] *Mikrokosmos* 17: 97-99. 1923.

6522. FISCHER, R. *Oekologische Skizzen zur algenflora des Mährisch-schlesischen Gesenkes.* [Ecological sketch of the algal flora of the Moravian-Silesian Mountains.] *Schriften f. Süsswasser- u. Meeresk.* 2: 312-317. 1924.

6523. FOURNIER, P. *La Forêt sur l'Infra-lias hautmarnais (Notes d'écologie).* *Bull. Soc. Bot. France* 72: 834-852. 1925.—The region studied is a circle with its center at Damrémont, France, having a radius of 12-15 km. and an altitude of 350-400 m. The geology, history and principal plant communities are described. The vegetation is essentially silicicole with a few calcicole species. The forest has been decidedly altered by man's activities and the changes after cutting are carefully noted. The greater part of the shrubs on cut-over lands persist for only some 20 years, although *Ilex aquifolium* continues to grow under close shade. *Fagus sylvatica* covers the sandy plateaus, with *Quercus robur* on the lower clay slopes. Notes on rare species are also given.—*From abstract by H. des Gayets (transl.).*

6524. FRANCIS, W. D. *Observations on the plants of Charleville.* *Queensland Agric. Jour.* 24: 593-602. 5 pl. 1925.—The vegetation of Charleville and similar Western areas of Queensland has a grey appearance, a comparatively small number of species and the predominance of one or a few species of plants over fairly large areas. These features as well as the brittleness of parts of many of the trees, such as the twigs of *Heterodendron oleaefolium*, are ascribed in some degree to the comparatively low annual rainfall (20 in.). The stunted and distorted forms assumed by Mulga (*Acacia aneura*), an edible tree, as the result of stock feeding upon it are described and illustrated. The chief plant associations of the district are outlined and some of the species illustrated.—*Author.*

6525. FREDERICQ, LEON. *Dans la nouvelle Belgique.* [In New Belgium.] *Bull. Cl. Sci. Acad. Roy. Belgique.* 5e. Sér. 8: 559-566. *Map.* 1922.—This region in the environs of Eupen and Malmedy with an altitude of some 500 m. and a precipitation reaching 140 cm. appears, in spite of its moderate elevation, to constitute an arctic-alpine island. The peculiarities of its flora and fauna are briefly discussed.—*Geo. D. Fuller.*

6526. FRIES, ROB. E. *Vegetationsbilder von den Kenia- und Aberdare-Bergen (Ostafrika).* [Pictures of the vegetation of Mounts Kenya and Aberdare (East Africa).] *Vegetationsbilder* 167: 1-12. 6 pl. 1925.—Among the vegetation types illustrated are photographs of montane rain forest at 2300 m., bamboo thicket at 2800 m., and remarkable arborescent species of *Lobelia* and *Senecio*.—*Geo. D. Fuller.*

6527. GAMS, H. *Die Waldklimate der Schweizeralpen, ihre Darstellungen und ihre Geschichte.* [The climate of the forests of the Swiss alps.] *Verh. Naturf. Ges. Basel.* 35: 262-276. 1 pl., 5 fig. 1923.

6528. GARDNER, C. A. *List of the naturalised plants of extra-tropical Western Australia.* *Jour. Royal Soc. Western Australia* 11: 69-80. 1924-1925.

6529. GARDNER, C. A. *The forest formations of Western Australia: IX. The Kimberley Savannah Woodland.* *Australian Forest. Jour.* 8: 213-216, 309-312. 1925.—The climatic, edaphic and vegetational characteristics of this tropical savannah woodland are described.—*C. F. Korstian.*

6530. GAYER, JULIUS. Der letzte Kastanien-Urwald in Ungarn. [The last virgin chestnut forest in Hungary.] Mitteil. Deutsch. Dendrol. Ges. 35: 111-116. 2 pl. 1925.—The last virgin forest of *Castanea vesca* is described as located in the southeastern part of the eastern Alps.—J. C. Th. Uphof.

6531. GILOMEN, H. Neuere Methoden zur Untersuchung der Pflanzengesellschaften. [Newer methods of investigating plant communities.] (Abstr.) Mitteil. Naturf. Ges. Bern 1925: xix-xxi. 1926.—The relationship between area and number of species seems better expressed by Kylin's than by Arrhenius' formula. Homogeneity may be expressed by a curve based on number of species.—S. Blumer (transl.).

6532. GOIDUKOV, N. Zur Ökologie der Süßwasseralgen. [Ecology of freshwater algae.] Bot. Arch. 6: 112-123. 1924.

6533. GONZALEZ, EZEQUIEL, Y JESUS UGARTE. Necesidad de un estudio metodico sobre geobotanica forestal. [Need for a systematic study of forest phytogeography.] España Forest. 9: 7, 24-26. 1923.—Mayr's classification of zones is criticised as not entirely adapted to Spanish conditions where trees like *Quercus ilex*, *Abies pinsapo*, and *Pinus pinaster* occur at the same altitude.—W. N. Sparhawk.

6534. GRABHAM, G. W., AND R. P. BLACK. Report of the mission to Lake Tana, 1920-1921. Government Press: Cairo, 1925.

6535. GRAEBNER, P. Die Heide Norddeutschlands und die sich anschliessenden Formationen in biologischer Betrachtung. [The heaths of northern Germany and the associated formations, from an ecological point of view.] In: ENGLER, A., UND O. DRUDE. Die Vegetation der Erde (2nd ed.) 5: W. Engelmann: Leipzig, 1925.—The problems of applied botany are given more attention in this 2nd edition. The heath is a formation that consists mainly of *Calluna vulgaris* and is confined to a climate with profuse and regular precipitation. The heath plants thrive on poor sandy soil and the vegetation closely resembles that of the high moor ("Hochmoeren"). The soil is transformed by the addition of a superficial layer of humus and by the formation of a hard-pan subsoil. These interfere with the cultivation of the area.—In the 2nd part of the volume the author gives a classification of the heath formation, distinguishing (1) true heath with *Calluna*, *Erica tetralix*, *Empetrum* or *Sarothamnus Scoparius*; (2) grass heath; (3) forest heath; and (4) sand fields. The forest-heaths are of great importance in northern Germany since they often represent transition stages from forest to true heath. Finally, the relationship of heath to other formations, such as halophytes, grasslands, forests and steppes, is discussed.—O. Stocker (transl.).

6536. GRIFFITHS, B. M. Studies in the phytoplankton of the lowland waters of Great Britain 3: The phytoplankton of Shropshire, Cheshire and Staffordshire. Jour. Linnean Soc. Bot. London 47: 75-98. 1925.—The writer describes the phytoplankton, macrophytic aquatic vegetation and topography of 23 small lakes, mostly natural, situated on lowland country of Triassic age in the northwestern midlands of England. Comparisons are made with phytoplankton records of 1884. Water-blooms of Myxophyceae and of *Ceratium hirundinella* were frequent. Of the 80 species recorded there were: Myxophyceae 13, Peridinieae 7, Bacillarieae 8, Protococcales 31, Desmidiaceae 18. Compared with West's figures for larger British lakes, there were proportionately more Myxophyceae and Peridinieae, many more Protococcales, and fewer Bacillarieae and Desmids. Size and topography of pool are correlated with plankton type, and limno-, benthic-, and helio-plankton are distinguished. New forms are: *Staurastrum paradoxum* var. *biradiatum* n. var.; *Closterium tortum* n. sp.; *Anabaena affinis* var. *intermedia* n. var. Variation in numbers per colony of *Asterionella* (12-8-4) shows some correlation with size and contour of pools. Variation of the distribution of plankton over the surface of one pool was noted. The phytoplankton of English lowland waters resembles that of lakes of the Continent where soil conditions are similar, and differs from that of the larger British lakes which lie in mountainous districts of ancient rock.—Author.

6537. GRIGGS, R. F. The Valley of Ten Thousand Smokes. xvi + 340 p. National Geographical Society: Washington, D. C., 1922.

6538. GROPENGIESSER, C. Untersuchungen über die Symbiose der Blattiden mit niederen Pflanzlichen Organismen. [Studies on the Symbiosis of Blattidae with Lower Plant Organisms.] Centralbl. Bakt. [etc.] II Abt., 64: 495-511. 1925.—Out of 63 cocoons of *Peri-*

planeta orientalis and 20 of *Blatta germanica*, the author isolated 43 times, a yeast; 21 times a spore-forming bacillus; and 4 times, a yellow sarcina. The latter is probably an air form, the bacillus is culturally like *B. cuenoti* Mercier, and the yeast belongs to the *Torula* group. The yeast is non-spore forming, cannot ferment sugars, does not form alcohol, and forms only a little acid. There is a possibility that the bacillus can fix atmospheric nitrogen, although only mere traces have actually been obtained.—S. A. W. (*Contrib. by Absts. Bact.*).

6539. GUYOT, H. Association standard et coefficient de communauté. [A standard association and a coefficient of community.] Bull. Soc. Bot. Genève 15: 265–272. 1923 [1924].—An ideal standard association is advocated. A comparison of the number and frequency of the species in any given association and the standard association may be expressed as a ratio termed the “coefficient of community.”—Geo. D. Fuller.

6540. HAMPTON, F. A. The scent of flowers and leaves. Its purpose and relation to man. Dulau and Co., Ltd.: London, 1925.

6541. HARDY, M. E. An introduction to plant geography. 192 p., 66 illus. American Branch Oxford Univ. Press: New York, 1922.

6542. HARPER, ROLAND M. Some interesting relations between vegetation and mineral deposits. Engineer. and Min. Jour. 1921: 693. 1921.

6543. HARSHBERGER, JOHN W. A botanist in Jaturnheim. Amer. Scandinavian Rev. (Mar.) 1923.—A short description of a botanical trip across Sognefjeld in Central Norway.—Author.

6544. HARSHBERGER, JOHN W. A comparison of the alpine regions and vegetation of eastern America, Norway and Switzerland. Veröff. Geobot. Inst. Rübel 3: 271–278. 1925.

6545. HARSHBERGER, JOHN W. Rhythmic or seasonal appearance of orchids. *Bartonia* 8: 7. 1924.—Observations are reported of the irregular or rhythmic occurrence of *Habenaria ciliaris* on Long Island, New York, and of *Pogonia verticillata* in Pennsylvania.—F. W. Pennell.

6546. HAUSRATH, H. [Rev. of: RICHTER, KARL. Neue Untersuchungen über das Blüten und den Blutungssaft der Laubholzer. (Recent investigations on flowers and nectar of deciduous trees.) Mitteil Sachs. Forstl. Versuchsanstalt Tharandt II. 4. 1925.] Allg. Forst.- u. Jagd-Zeitg. 102: 32. 1926.

6547. HELM, C. A. Meadow and pasture management in the Ozark region of Missouri. Missouri Agric. Exp. Sta. Bull. 234. 1–32. 21 fig. 1925.

6548. HOPKINS, A. A. Plumbing the depths of Neptune's secrets. Sci. Amer. 133: 86–87. 12 fig. 1925.—A short, popular account of the expedition of Dr. Wm. Beebe to the Sargasso Sea.—Chas. H. Otis.

6549. HUNTINGTON, E. Tree growth and climatic interpretations. In: Quaternary climates. Carnegie Institution: Washington, D. C. P. 155–204. 1925.

6550. JOHNSON, E. M. Analyses of rainfall from a protected and an exposed gage for sulfur, nitrate nitrogen and ammonia. Jour. Amer. Soc. Agron. 17: 589–591. 1925.—A period of 15 months gave results as follows in pounds per acre: Sulphur, 56.07; nitrates, 0.71; and NH_3 , 9.81, in the protected gage. Sulphur, 50.61; nitrates, 0.81; and NH_3 , 17.44, in the exposed gage. The greater amount of NH_3 in the exposed gage may be due to biological activity on bird droppings. The larger amount of S in the protected gage may be due to loss of S by biological activity.—F. M. Schertz.

6551. JOHNSTON, T. HARVEY. The relation of climate to the spread of prickly pear. Trans. and Proc. Roy. Soc. South Australia 48: 269. 1 pl. 1924.—Based on climatological evidence alone, the pest pear (*Opuntia inermis*) if unchecked will not become a pest where there is a pronounced dry season of 5 or more months, in those parts with an average annual rainfall of more than 32 inches, nor on tablelands with cold winters. It probably will take possession of 3 times the area it now has invaded. Limiting factors are briefly discussed for *O. amyclea*, *O. monacantha*, *O. aurantica*, *O. microdasys*, *O. imbricata*, *O. tomentosa*, *O. megacantha*, *O. dillenii*, and *O. elatior*.—E. N. Munns.

6552. JORDANOFF, D. On the phytogeography of the western part of the Balcan range. (Bulgarian, with German summary.) Ann. Univ. Sofia, Facult. Phys. Math. 20: 1924.—The author divides the vegetation of this mountain into 3 belts: (1) The beech forest, (2) North European coniferous forest, and (3) The alpine belt. The beech (*Fagus sylvatica*) is

the most common among the forest trees. The upper boundary of the forests is formed by *Picea excelsa* and *Pinus mughus*. The alpine belt consists of meadows and small shrubs. The Compositae is the best represented family.—*D. Atanasoff*.

6553. JOUANNE, PIERRE. Essai de géographie botanique sur les forêts de l'Aisne. Deuxième partie. Dunes siliceuses à *Carex arenaria*. [Geographic botany of the forest of Aisne. II. Sand dunes with *Carex arenaria*.] Bull. Soc. Bot. France 72: 853-856. 1925.—*C. arenaria* and *Phleum arenarum* on the sandy hills of Aisne are regarded as the last relics of a halophytic vegetation which covered the dunes of the Tertiary sea. Here, as on the existing maritime dunes, areas of purely siliceous sand are encountered along with calcareous sandy areas. Humidity is the chief factor controlling the vegetation of these areas. Alternate periods of rain and dryness regulate the abundance of *Veronica spicata* and *Dianthus deltoides*.—*H. des Gayets (transl.)*.

6554. KACHE, PAUL. Pflanzenphänologische Beobachtungen. [Phytophenological observations.] Mitteil. Deutsch. Dendrol. Ges. 35: 255-270. 1925.—The time is given of the development of different organs of a large number of trees and shrubs during various parts of the year.—*J. C. Th. Uphof*.

6555. KAISER, ERICH. Was ist eine Wüste? [What is a desert?] Mitteil. Geog. Ges. München 16³: 1-20. 1923.

6556. KALLENBACH, FRANZ. Nochmals das Eichhörnchen und die Pilze. [Squirrels and fungi.] Zeitschr. Pilzkunde 4: 74-77. 1925.

6557. KALLENBACH, FRANZ. Pilzspeicherung durch Eichhörnchen. [Storage of mushrooms by squirrels.] Zeitschr. Pilzkunde 2: 1-4. 1 fig. 1923.—The finding of mushrooms impaled on branches by squirrels is described. The species noted are listed and compared with those which Buller found to be preferred by these animals in North America.—*F. Weiss*.

6558. KASHYAP, S. R. The vegetation of Western Himalaya and Western Tibet in relation to their climate. Jour. Ind. Bot. Soc. 4: 327-344. 1925.

6559. KLIKA, J. Střední Polabí. (Nástin fytogeografický.) [A phytogeographical study.] Sborn. Čs. Zeměp. Spol. 1923: (1-26.) 1923.—This study embraces a region on the banks of the Labe and contains chapters on: (1) Floristics of the region; (2) The limits between the central and eastern region; (3) Geological conditions; (4) Climatic conditions; (5) Development of the flora; and (6) Plant associations of the valley. A 2nd part gives the general conditions of the country and a 3rd the physiognomy of the formations.—*Courtesy of Preslia (transl.)*.

6560. KNOCHE, HERMAN. Vagandi Mos. Reiseskizzen eines Botanikers. I. Die Kanarischen Inseln. [The way of wandering. Travel sketches of a botanist. I. The Canary Islands. 304 p., 25 pl., 133 fig. Librairie Istra: Strashbourg, 1923.—An ecological study of the vegetation of the 7 islands of the group here includes some account of the geological and climatic conditions, the character of the original plant cover, the destruction of forests and the introduction of foreign plants. There is an annotated list of 700 plants.—*G. E. Nichols*.

6561. KNOLL, FRITZ. Insekten und Blumen; experimentelle Arbeiten zur Vertiefung unserer Kenntnisse über die Wechselbeziehungen zwischen Pflanzen und Tieren. [Insects and flowers; experimental studies for enlarging our knowledge of the mutual relations between plants and animals.] Abhandl. Zool.-Bot. Ges. Wien Bd. 12. Hft. 1-2. Illus., plates (partly col.). 1921-1922.

6562. KUPFFER, K. R. Grundzüge der Pflanzengeographie des Ostbaltischen Gebietes. [Phytogeography of the eastern Baltic regions.] Abhandl. Herder Ins. Riga 1⁶: 1925.

6563. LEININGEN. [Rev. of: WALTHER, JOHANNES. Das Gesetz der Wüstenbildung in Gegenwart und Vorzeit. (Formation of deserts.) 416 p., 203 fig. Quelle und Meyer: Leipzig, 1924.] Centralbl. Gesam. Forstw. 50: 363-366, 1924.

6564. LINDHARD, E. Short corolla tubes in red clover and the visiting bees. Tidsskr. Planteavl. 27: 653-680. 5 fig. 1921.

6565. LONG, FRANCES L., F. E. CLEMENTS, AND C. R. HAUPT. Ecological measurement of photosynthate. Carnegie Inst. Washington [D. C.] Year Book 24: 322-323. 1925.

6566. LÜDI, WERNER. Die Pflanzengesellschaften des Lauterbrunnentales und ihre Sukzession. Versuch Gliederung der Vegetation eines Alpentaies nach Genetisch-dynam-

ischen Gesichtspunkten. [The plant associations of the valley of Lauterbrunner and their successions.] Beitr. Geobot. Landesaufnahme [Zürich] 9: 1-364. 4 pl., 2 maps. 1921.—This article gives the application of the principles of succession elaborated in a former contribution (See Bot. Absts. 15, Entry 3395). The plant associations concerned are briefly described and their "characteristic" species cited, more attention being given to the problems of succession. The geological, morphological and climatological conditions of the valley are reviewed and the problem of calcicoles discussed. The climax associations are examined and an attempt is made to classify them on the basis of altitude: (1) *Fagetum silvaticae*, montane, 650-1200 m.; (2) *Piceetum excelsae*, subalpine, 1200-1900 m.; (3) *Rhodoretum ferrugineae*, transitional, 1900-2100 m.; (4) *Nardetum strictae* and *Loiseleurietum procumbentis*, lower alpine, 2100-2300 m.; (5) *Caricetum curvulae* and *Elynetum myosuroidis*, upper alpine, 2300-2900 m.; (6) Regions above a phanerogamous climax. Some of these associations descend to lower altitudes on immature soils that may later support the normal associations of the altitude. Man has caused this descent in many instances by destroying native vegetation by excessive grazing of meadows and by cutting of forests. This has even caused impoverishment of the soils. The successional series is also discussed with respect to soil development from (1) steep rocks, (2) flat rocks, (3) static gravel and (4) moving gravel. Secondary successions are also considered and the influence of calcareous and non-calcareous soils. The genetic-dynamic relations of the vegetation and its economic aspects are presented in colored maps that show transitions, final stages, altitudinal relations and soil utilization. For the utilization unit the term "chrese" is proposed. The "chreses" are combined into chrese-groups and chrese-classes. Thus "rich hay meadows" and "poor hay meadows" are "chrese-groups" and together form a "chrese-class."—*Author (transl.)*.

6567. LÜDI, WERNER. Die Untersuchung und Gleiderung der Sukzessionsvorläufe in unserer Vegetation. [The process of succession in our vegetation.] Verh. Nat. Ges. Basel 35: 277-302. 1 fig. 1923.—A summary of the author's investigations on succession in Switzerland is given and 2 stages of investigation are recognized; the analytic and the synthetic. Analysis is fundamental and experimentation should be increased. The process of succession is regarded as an evolutionary one leading from one association or subassociation to another. It can be understood only through a detailed study of the association. From a dynamogenetic viewpoint we are interested in phases in the development of an association—the initial, the normal and the terminal—as well as in the part single species take in building up, sustaining and destroying the association. Cyclic or accidental changes in the floristic composition of an association or seasonal changes of aspect do not constitute succession.—The analysis is followed by synthesis and the summarizing of results. Here the work of other investigators should be considered. The term society ("Verein") is replaced by association ("Gesellschaft"). The term climax is to be limited to the final association in the succession or, in the opinion of the author, to be replaced by "optimal association." Permanent associations are discussed and distinguished from final associations. Where several final associations exist simultaneously, as along altitudinal tension lines, they are often distributed in a mosaic. The inversion of altitudinal limits, as when a *Fagetum* occurs above a *Piceetum*, are discussed. The successional series seem less fitted as a basis of classification than the principle of floristic relationship.—*Author (translated)*.

6568. LUNDEGÄRDH, HENRIK. Klima und Boden in ihrer Wirkung auf das Pflanzenleben. [Climate and soil as they influence vegetation.] viii + 419 p., 113 fig. G. Fischer: Jena, 1925.

6569. MACDOUGAL, D. T. A cycle of the Salton Sea. Carnegie Inst. Washington [D. C.] Year Book 24: 168-169. 1925.

6570. MARKGRAF, FR. Die Bredower Forst bei Berlin: eine botanischökologische Studie. [The Bredower forest at Berlin: A botanical-ecological study.] 91 p. Naturschutzverlag: Berlin-Lichterfelde, 1922.

6571. MASON, MICHAEL H. The arctic forests. xiii + 320 p. 53 pl. Hodder & Stoughton, Ltd.: London, 1924.

6572. MILOVIDOV, P. Bactéries des tubercules radicaux de certaines légumineuses. I. *Trifolium pratense*. II. *Galega officinalis*. [The bacteria of the root tubercles of certain legumes.] Spisy Vydávané Přírodovědeckou Fakult. Karlovy Univ. 49. 1-49. 4 pl. 1925.

6573. MOTYKA, J. Die Pflanzenassoziationen des Tatra-Gebirges. II Teil: Die epilithischen Assoziationen der nitrophilen Flechten im Polnischen Teile der Westtatra. [The plant associations in the Tatra Mountains. II: Epilithic nitrophilous lichens in the Polish West Tatra.] Bull. Acad. Sci. Cracovie B. 3-4: 1 pl., 1 map. 1924.—The lichen associations which occur in localities frequented by nesting birds are described according to the method of the Swiss-French phytosociological school. On volcanic rocks the associations are those of: (1) *Ramalina strepsilis* with a sub-association of *Alectoria chalibeiformis*, very nitrophilous species; and (2) *Candellaria vitellina*, less nitrophilous, at lower altitudes. On calcareous rock and on dolomite there are associations of *Physcia caesia* on the tops of the rocks and of *Caloplaca elegantis* in shallow depressions.—*Autor (transl.)*.

6574. MÜLLER, KARL. Das Wildseemoor bei Kaltenbronn im Schwarzwald. [The moor of Wildsee near Kaltenbronn in the Black Forest.] 161 p., 28 pl., 1 map. G. Braun: Karlsruhe, 1924.

6575. MÜLLER, P. E. Bidrag til de Jydske hedesletters Naturhistorie karup hedeslette og beslaegtede Dannelser en pedologisk Undersøgelse. [The natural history of Jutland moors.] Biol. Meddelelser K. Danske Videnskab. Selskab. 4²: 1-244. 1 map. 21 fig. 1924.

6576. PACZOSKI, JOSEPH. Einige historische Angaben aus dem Gebiet der Phytosociologie. [A historical sketch of phytosociology.] Bot. Notiser 1925: 320-324. 1925.—The author disputes the statement that Kryloff of Russia was the first to use the term "phytosociology." He claims that it was first used by himself (Paczoski) in an article published in Poland in 1896 and used with its present accepted meaning. He further claims that he has a scheme for the classification of plant communities based on social factors.—*Geo. D. Fuller*.

6577. PACZOSKI, J. Szkice fitosocjologiczne. [Phytosociological sketches.] Biblioteka Botaniczna 1: 1-131 + I-IV. Warsaw, 1925.—This study contains chapters discussing: (1) The essence of the plant community; (2) the plant community and the environment; (3) the plant community and the biological types; (4) the form and the structure of the plant community; (5) the dynamics of the plant communities; (6) the evolution of vegetation; (7) the position of phytosociology in the science; and (8) historical notes on the beginnings of phytosociology. The author claims that he was the first to introduce the term "phytosociology" (in 1896).—*Hanna Czezcott*.

6578. PAVILLARD, J. Controverses phytosociologiques. [Phytosociological disputes.] P. 1-24. Montpellier, 1925.—The differences of the Upsala and the Zurich-Montpellier schools of phytosociology are discussed. Many of the "discoveries" of the former are shown to be facts formerly well recognized. Among the topics discussed are "constants" and "constance," "Macro-" and "Micro-associations."—*Geo. D. Fuller*.

6579. PENNELL, FRANCIS W. Successful botanical expedition to Colombia. Bull. Pan-Amer. Union 57: 221-232. 1923.—The expedition "was organized for the purpose of collecting the plants growing in the cool Andes, and for studying the distribution of the Andean floras." Over 7000 collections, comprising between 4500 and 5000 different species, were made. This number of species—obtained during 5 months and without including many trees or especially difficult plants, and only those chanced upon—is 1½ times as many as the entire number of flowering plants known to exist in the U. S. A. north of 36° and east of 100°.—*M. N. Levine*.

6580. PODPERA, JOSEPH. Geobotanický Rozbor Arealu Rostlinných Stepí Priuralských. (English Summary.) [Geobotanical analysis of the vegetation of the steppes adjacent to the Ural Mountains.] Spisy 1923²⁷: 1-67. 1923.

6581. POMA, GEORGES. L'influence de la salinité de l'eau sur la germination et la croissance des plantes halophytes. [Influence of the salinity of the water on the germination and growth of halophytes. Bull. Cl. Sci. Acad. Roy. Belgique 5e. sér. 8: 81-99. 2 fig. 1922.—Seed of these plants germinate best in fresh water, the process being retarded by increased concentration. Different species appear to have different limits of concentration at which germination ceases. After being for a time in water of high concentration seed germinate quickly on being removed to fresh water. Each species has an optimum concentration for growth quite different from the optimum for germination.—*Geo. D. Fuller*.

6582. PRAEGER, R. L. Aspects of plant life, with special reference to the British flora. (Nature Lover's Series.) 208 p. S. P. C. K.: London; Macmillan Co.: New York, 1921.

6583. RILEY, W. E., AND NORMAN CUNLIFFE. *An investigation into the relation between height growth of trees and meteorological conditions.* Oxford, 1922.

6584. RODRIGO, P. A. *Pollination and the flower of rice.* Philippine Agric. 14: 155-171. 2 pl., 1 fig. 1925.

6585. RÜBEL, EDUARD. *Alpenmatten-Ueberwinterungsstadien.* [The winter condition of alpine mats.] Veröff. Geobot. Inst. Rübel 3: 37-53. 8 pl. 1925.

6586. RÜBEL, EDUARD. *Betrachtung über einige pflanzensoziologische Auffassungsdifferenzen.* [Some different concepts of phytosociology.] Beibl. Veröff. Geobot. Inst. Rübel Zürich 2: 1925.—This is intended to promote a mutual understanding between the phytosociological schools of Sweden and Switzerland whose main differences lie in the breadth of the definition of the association and in the different material studied. In Sweden the chief studies have been made on dwarf shrub heath and in Switzerland on montane and alpine meadows.—*Ernst Furrer (translated).*

6587. RÜBEL, EDUARD. *Ergebnisse der Internationalen Pflanzegeographischen Exkursion durch die Schweizeralpen, 1923.* [The International phytogeographic excursion through the Swiss Alps in 1923.] Veröff. Geobot. Inst. Rübel Zürich 1: 1-361. 1924.—This consists of an introduction by Rübel, a sketch of the previous excursions by Schröter and 11 papers by members of the excursion.—LUDW. DIELS reports on "Sociological studies of the lithophytes of the Alps" (3 p.) and makes comparisons with areas previously studied in Piz Alv (Bernina) and in Schlern.—G. EINAR DURIETZ contributes "The Vegetation of the Alps compared with that of Scandinavia," (108 p.) describing the associations and making comparisons based on physiognomy, man's influence, stability of vegetation, the similarity and the vicariousness of the associations, number of associations and of species, limits of distribution and effects of altitude.—K. LINKOLA discusses "Forest types of the Swiss Alps" (86 p.) and concludes that "forest types" may be used in phytogeographical investigations in Switzerland although less readily than in northern Europe.—J. PAVILLARD and A. P. ALLORGE describe "The 3rd International Phytogeographic Excursion" (13 p.) including the trips and the scientific work of the members.—J. PODPERA presents "A list of the Bryophytes collected on the 3rd Inter. Phytogeog. Excursion" (23 p.).—R. LLOYD PRAEGER writes on "Switzerland and Ireland; some comparative studies" (14 p.).—CONST. REGEL contributes a similar paper "Nordic ("Nordische") and alpine vegetation" (10 p.).—E. J. SALISBURY in "The change in habitat of certain plants" (4 p.) shows how various species differ in Switzerland and in England in habitat and altitudinal limits.—FR. SCHÜSTLER discusses "The problem of equivalent grouping in the higher forest limits of the mountains of central Europe" (11 p.).—W. SZAFAER writes on "The sociological relations of the plant associations of the snow valleys" ("Schneetälchen") and makes comparisons with high Tatra (11 p.).—F. VIERHAPPER furnishes "The Swiss flora with comparative phytogeographic observations between the Swiss and the eastern Alps" (50 p.) in which he critically discusses systematic problems.—*Ernst Furrer (translated).*

6588. RÜBEL, EDUARD. *Vorschläge zur Untersuchung von Buchenwäldern.* [An outline of research in the beech forests.] Beibl. Veröff. Geobot. Inst. Rübel Zürich 4: 1-35. 1925.—A committee of geobotanists meeting at Lugano suggests that studies in the beech woods include: (1) Foresters' methods of planting, trimming and combining other species along with *Fagus* in mixed stands; (2) the value, dominance and life-forms of the various species in the wood, together with the ecological groups and the seasonal variations; (3) the successional relations; and (4) the climatic, edaphic and biotic factors.—*Blanche McAvoy.*

6589. RÜBEL, EDUARD. *Wüstenvegetation in Tunesien.* [Desert vegetation in Tunis.] Naturwissenschaften 12: 861-868. Map. 1924.—The average January temperature varies from 9.8°C. at Tunis to 10.5° at Gabes. The yearly precipitation varies from 165 cm. at Ain Darban to 45 cm. at Tunis, 16 cm. at Gabes and 8 cm. at Tozeur. There are 3 important types of vegetation, the Halfa-steppe, the Artemisia-steppe, and the Steppe-desert. The first 2 are characterized by a rather dense growth, while the last is a less densely-grown region. The Halfa-steppes are completely dominated by *Stipa tenacissima*. A list of 33 accompanying species is given, including only 1 geophyte, *Scilla villosa*. Man's influence on the Halfa-steppes has been great, as nomads have long used it for growing barley and the Halfa-grass

is harvested and used for floor-mats, ship-cables, paper, etc. The outstanding factors for the Halfa-steppes are 20-40 cm. of rainfall, gravelly soil with some sand, and not much salinity. *Artemisia herbaalba* and *Anabasis aphylla* are the dominants of the Artemisia-steppe together with 9 other shrubs, 13 therophytes and 4 perennials including *Asphodelus tenuifolius*, a geophyte. In habitat the Artemisia-steppe resembles the Halfa-steppe, but floristically it is more closely related to the Steppe-desert. The Steppe-desert occurs where the precipitation is less than 20 cm. Less than half the soil is covered with plants. The vegetation is composed mostly of shrubs except after the rainy season when a number of annuals are found. Lists of species are given.—*Constance E. Hartt.*

6590. RUNKIAER, C. Forskellige vegetationstypers forskellige indflydelse paa jordbundens surhedsgrad (Brintionkoncentration). [The influence of various types of vegetation on the degree of acidity in the soil.] Biol. Medeel. K. Danske Videnskab. Selskab. 3¹⁰: 1-74. 1922.

6591. RYLOV, W. M. Beiträge zur Kenntnis der Hochproductionen des Heleoplanktons. I. Ueber eine Wasserblüte von *Anabaena schermetievi* Elenking im Triton-Teich (Gouv. Petrograd). [High production of heleoplankton. I. "Water bloom" of *A. schermetievi* in Triton Pond (province of Petrograd).] Internat. Rev. Ges. Hydrobiol. u. Hydrograph 13: 171-184. 1925.—A record is given of the appearance of *Anabaena schermetievi* in unusually large quantity (6051 threads, or 476,818 cells per cc.) in an artificial pond (1.5 m. deep, and 1560 sq. m. in area) during July 1923, at a water temperature around 20°C. The appearance, maximum, and disappearance occurred within the space of a month. The transparency of the water varied from 57 cm. at their first appearance, 30 cm. at the maximum, to 67 cm. at the time of their disappearance. The measurements were made with a Secchi disc. Spore-formation was concurrent with the period of maximal numbers. The spores were observed to settle to the bottom, while the vegetative threads for the most part remained afloat. Unusually high amounts of dissolved oxygen accompanied the maximal period, but with the onset of spore-formation and the breaking up of the threads the oxygen fell to a figure below the summer average for the pond. The author suggests that there is greater consumption of oxygen at this time to oxidize the disintegrating remains of the *Anabaena* filaments.—*Lowell E. Noland.*

6592. SALISBURY, E. J. The structure of woodlands. Veröff. Geobot. Institut. Rübel Zürich 3: 334-354. 5 fig. 1925.—Particular attention is here given to the strata or stories to be recognized in the forests of the British Isles. The principal associations compared are the Fagetum, the Quercetum and the Fraxinetum. The spatial relations are considered for both the aerial and subterranean organs. The conditions without and within the tree canopy are compared with those of the shrub and ground layers. In the ground flora the pre-vernal, summergreen, wintergreen and evergreen types are examined and their assimilatory periods compared. The organic material, pore space, water content, CO₂ content and penetrability of the soil are discussed for the (1) surface litter, (2) surface soil, (3) sub-surface soil and (4) subsoil.—*Geo. D. Fuller.*

6593. SCHENSKY, F. Tier- und pflanzenleben der Nordsee nach Aquarium-Aufnahmen. [Animal and plant life in the North Sea.] 3 pt., 30 pl. W. Klinkhardt: Leipzig, 1923.

6594. SCHIEFENDECKER. Die Eiben im Kästental im Harz. [Taxus baccata at Kästental in the Harz.] Mitteil. Deutsch. Dendrol. Ges. 35: 332. 1 pl. 1925.—In Kästental in the Harz there are a number of specimens of *Taxus baccata* about 1000 years old.—*J. C. Th. Uphof.*

6595. SEGRÉ, L. La botanique en Sologne, autrefois et aujourd'hui. [The botany of Sologne, formerly and today.] Bull. Soc. Bot. France 72: 763-768. 1925.—Last century the area was a vast tract of swamps, water courses and barren sand. These by the application of modern methods of drainage and agriculture have been transformed into cultivated fields and plantations of pine. On the sandy soil there are found plants usually associated with mountains of rather high elevation. Thus, at an altitude of 100 m. *Arnica montana* and *Ajuga pyramidalis* occur. The latter is found only above 1200 m. in the Pyrenees. At Sologne it seems a glacial relic. Among other plants noted are *Salix hypophoeifolia* (male) and many hybrids of the genus *Verbascum*.—From abstract by H. des Gayets (transl.).

6596. SHREVE, FORREST. Deserts of Northeastern Lower California. Carnegie Inst. Washington [D. C.] Year Book 24: 163-164. 1925.

6597. SINGER, R. Pflanzengeographische Beobachtungen an oberbayerischen und oberpfälzischen Hymenomyceten. [Phytogeographical observations on Hymenomycetes of upper Bavaria and upper Baden.] Zeitschr. Pilzkunde 1: 63-66. 1922.

6598. SJÖSTEDT, L. GUNNAR. Undersökningar över Öresund. IX. En orientering över bottenförhållandena i Öresund och södra österjön. [Researches upon Öresund IX. The bathysmal conditions of Öresund and the southern part of Östersjön.] (German summary.) Lunds Univ. Arsskrift 18^a: 1-29. 2 pl., 22 fig. 1922.

6599. STÄGER, ROB. Einige Fruktifikations-Versuche an Pflanzen der voralpinen Stufe. [Fertilization experiments with subalpine plants.] Verh. Naturf. Ges. Basel 35: 374-381. 1923.

6600. STEFANOFF, B. Woody formations of the Northern Strandja. (Bulgarian with German summary.) Ann Univ. Sofia, Facult. Agric. 20: 33-68. 1924.—The vegetation of the Strandja mountain range is characterised by the presence of large forests of *Fagus orientalis* and contains in its undergrowth several evergreen shrubs, such as *Rhododendron ponticum* and *Prunus laurocerasus*. The affinity of this vegetation to that of the northern shore of Asia Minor and the Western Caucasus shows that it may be a relic of the Tertiary.—D. Atanasoff.

6601. STERNER, RIKARD. Einige Notizen über die Vegetation der Insel Öland. Führer für die vierte I. P. E. [The vegetation of the island of Öland (Sweden). Guide for the fourth international phyto-geographic excursion.] Svensk Bot. Tidskr. 19: 303-322. 7 fig. 1925.—It contains a survey of the table-land ("alvar") vegetation in the south of the island, including various scrub, grass, herb, moss, lichen, and algal communities. In the Karst districts lichens grow on the flag-stones with such shrubs as *Cotoneaster integerrimus*, *Juniperus communis*, *Rosa canina* and *Coronilla Emerus* in the crevices.—The scanty rain from May to October (less than 250 cm.) is regarded as a continental feature of the climate, while maritime influence is seen in the high temperatures in the autumn. The impervious calcareous rocks of the "alvar" cause imperfect drainage which influences the distribution of the plant communities.—O. Heilborn.

6602. STEWARD, ALBERT N. A trip to Hwangshan. China Jour. Sci. and Arts 3²: 77-83. Illus. 1925.—The author describes a botanical exploration made by himself and 2 representatives of the Forestry Dept., Nanking Univ., summer of 1924, to a region not far from the Yangtze River in Anhwei Province. The region visited is known as Hwang Shan, a mountain range where numerous streams find their source and flow in various directions, not only through the Province of Anhwei but also through the neighboring provinces of Chekiang and Kiangsi. The flora proved to be very interesting and abundant, and a number of trees of unusually large size were seen, among which were *Aphananthe*, *Pterocarya* (Chinese ash), *Acer*, *Liquidamber*, *Cunninghamia*, *Keteleeria* and *Tsuga*. *Carpinus* was common in the stream beds and *Rhus verniciflua* (varnish tree) was very common.—R. H. Porter.

6603. STOCKER, OTTO. Ökologischpflanzegeographische Untersuchungen an Heide, Moor und Salzpflanzen. [Ecological plant geographical researches on heather, moor and salt marsh plants.] Naturwissenschaften 12: 637-646. 3 fig. 1924.—A critical discussion is given of the older theories of the ericoid structure of moor plants and on the basis of Montfort's and the author's experiments, the untenability of Schimper's theory of xerophytism of this ericoid structure is demonstrated. Careful discussion is given of the anatomical structure of typical moor plants, and Stocker's own studies on the transpiration per unit of surface which was found to be as high as many meso- or even hygrophytes. His discussion of "physiologically dry" moor and bog soils as well as salt plants is very complete and based on careful experiment.—Orton L. Clark.

6604. SUESSENGUTH, KARL. Über die Blüteperioden der Bambuseen. [Flowering periods of bamboos.] Flora 118-119: 503-535. 1925.—The peculiar periodicity of flowering of many bamboos cannot be satisfactorily explained on the basis of wet and dry seasons or regional climatic conditions. The author gives records of years of heavy flowering, going back in some cases to 1804, for the East Indies, the Philippines, Japan, Central and South America.

Curves are given to show the correlation of sunspot periods with seasons of abundant flowering.—A. G. Stokey.

6605. SUKATSCHEW, W. Über die Methoden der Phytosoziologie. [Methods in phytosociology.] Engler Bot. Jahrb. 60 (Beibl. 135): 1-16. 1925.

6606. SYKES, GODFREY. Physiography of the Colorado Delta. Carnegie Inst. Washington [D. C.] Year Book 24: 165-167. 1925.

6607. SZYMKIEWICZ, D. Études climatologiques. VI. Sur les rapports entre l'humidité du climat et la végétation. [Climatological sketches. VI. Relations between humidity and vegetation.] Acta Soc. Bot. Poloniae 3¹: 115-137. 3 fig. 1925.

6608. SZYMKIEWICZ, DEZYDERY. Sur l'importance du déficit hygrométrique pour la phytogéographie écologique. [The importance of hygrometric deficit in phytogeography.] Acta Soc. Bot. Poloniae 1: 1-11. 4 fig. 1923.

6609. TANSLEY, A. G. The vegetation of the Southern English Chalk. (Ober Kreide-Formation.) Veröff. Geobot. Inst. Rübel 3: 406-430. 1925.

6610. TAYLOR, WALTER P. Biological stations for the study of plants and animals together. Sci. Monthly 21: 390-393. 1925.—Systematic study of the relation of animals and plants should be carried on at stations located within their natural range.—A. M. Taylor.

6611. THOMSON, J. A. Mountain and moorland. (Nature Lover's Series.) 176 p. S. P. C. K.: London, 1921.

6612. THOULET, J. Découverte et mesure des courants marins profonds. [Discovery and measurement of deep marine currents.] Bull. Inst. Oceanograph. Monaco 463: 1-7. 1925.

6613. TRAPL, S. Ďumbír. Příspěvek k fytogeografii Nízkých Tater. [The phytogeography of Little Tatra.] Věda Přírodní 1924: 70-73. 1924.—The author describes the plant associations of the summit of Little Tatra, 2045 m.—*Courtesy of Preslia (transl.)*.

6614. TURESSON, GÖTE. The plant species in relation to habitat and climate. Hereditas 6: 147-236. 50 fig. 1925.

6615. TURESSON, GÖTE. The species and the variety as ecological units. Hereditas 3: 100-113. 6 fig. 1922.

6616. ŮLEHLA, VL. Jak působí vodíkové ionty na některé nižší rostliny (Příspěvek k experimentální ekologii sladkovodních řas). [The influence of H-ions on some lower plants. (A contribution to experimental ecology of fresh-water algae.)] Studia Mendeliana, Brunae, P. 227-253. Fig. 4. 1923.—The author investigates the influence of H-ions and variations in the quantity of hydrogen on assimilation in plants, using chiefly *Cladophora* and *Spirogyra*. In experiments with *Cladophora* and *Basidiobolus ranarum*, both organisms showed a distinct relation between variations in H-ions and growth. The idea is advanced that there is a sort of symbiosis of the bacteria and the algae which may be termed "electro-symbiosis." The membrane of the cell is shown to be more important than it has been hitherto regarded.—*Courtesy of Preslia (transl.)*.

6617. UPHOF, J. C. TH. Die Sequoia-Wälder Kaliforniens. [The Sequoia forests of California.] Gartenwelt 29: 112-113, 143-144. 5 fig. 1925.—A description is given of different forests in California in which *Sequoia gigantea* is to be found. The number of full grown trees is about 16,000.—*Author*.

6618. UPHOF, J. C. TH. Vegetationsbilder aus Staate Michigan. [Plant societies in Michigan.] 11 p., 6 pl. Gustav Fischer: Jena, 1921.

6619. VAN OYE, PAUL. Biologie et écologie du Phytoplancton d'un lac tropical. [Biology and ecology of the phytoplankton of a tropical lake.] Bull. Soc. Roy. Bot. Belgique, 2^e Sér. 56: 166-184. 1924.

6620. VILHELM, J. Příspěvek k oekologii mechů. (Kapitola z monografických studií o československých družích čeledi Grimmiaceae.) [Ecology of mosses. The family Grimmiaceae in Czechoslovakia.] Pub. Facult. Sci. Univ. Charles. Praha. 4. 1-48. 1923.—The species of the Grimmiaceae are mostly xerophytic with a few mesophytes or hydrophytes. The relationship between their ecology and their morphology and anatomy has received very little attention. Several species found in Czechoslovakia are thus studied.—*Courtesy of Preslia (transl.)*.

6621. VISHER, STEPHEN SARGENT. **Tropical cyclones of the Pacific.** Bernice P. Bishop Museum Bull. 20. 1-163. 20 fig. 1925.—The material presented is mainly meteorological and climatological. Evidence is presented to show that tropical storms may be effective in the dispersal of animal and plant forms from island to island, either by the power of wind to transport objects, or by abnormal ocean currents set in motion by hurricane winds. The influence of floods caused by the excessive rainfall associated with hurricanes on the dispersal of land forms is also considered. Other effects of tropical cyclones on Pacific Islands of ecological importance are: (1) The strong winds seriously injure vegetation by stripping off leaves and fruits, breaking branches and breaking off or uprooting trees. (2) The waves, caused by cyclonic storms, break off large blocks of coral and may also cause great erosion of the shore or leave large deposits of sand. (3) They induce torrential rainfall causing serious floods which erode the soil badly and influence the amount of uprooting of trees and other vegetation. (4) A large part of the rainfall of the drier parts of the Tropics and subtropics and of the drier leeward sides of mountains in the trade wind belt is caused by tropical cyclones thus promoting the growth of vegetation in these parts.—*H. F. Bergman.*

6622. WAGNERIN, W. **Neuere pflanzen geographische Literatur aus Finnland.** [Recent plant geographical literature from Finland.] *Naturwissenschaften* 12: 429-435. 1924.

6623. WAGNERIN, WALTHER. **Neuere pflanzensoziologische Literatur.** [Recent literature on plant sociology.] *Naturwissenschaften* 12: 843-847. 1924. A critical review of recent papers.—*Orton L. Clark.*

6624. WARD, R. DEC. **The climates of the United States.** Ginn and Co.: Boston, 1925.

6625. WARD, ROBERT DEC. **The importance of field-work in the study of climates.** *Proc. Amer. Philosoph. Soc.* 64: 64-77. 1925.

6626. WARÉN, HARRY. **Untersuchungen über die botanische Entwicklung der Moore mit Berücksichtigung der chemischen Zusammensetzung des Torfes.** [Peat bogs with special reference to the chemical composition of the peat.] *Wissenschaft. Veröffentlich. Finnischen Moorkulturvereins* 5: 1-95. Helsingfors, 1924.—This is an attempt to establish a relationship between the composition of the peat and the vertical succession of vegetation. The author lists the types of peat found in Finland as that formed from (1) vascular plants, (2) mosses, and (3) lichens. Peat from oligotrophic *Sphagnum* yields 0.1-1.3% of CaO and 0.6-2.2% N, that from eutrophic *Sphagnum* 2.0% CaO and 2.0% N and that from vascular plants 4.4% CaO and 3.9% N. The influences of these differences on vegetation is discussed in detail. The influence of Ca is regarded as important especially as it affects the reactions of the soil and its solutions. The reciprocal relations of *Sphagnum* and vascular plants seem to be dependent on the N content, *Sphagnum* decreasing with increasing N content. The ash content is greater in lower layers.—*From abst. by Mauno J. Kotilainen (transl.).*

6627. WARMING, EUG. **Økologiens Grundformer Udkast til en Systematisk Orning.** [Ecological life-forms and their classification.] K. Dansk. Vidensk. Selsk. Skrift. *Naturvidensk og Math. Afd.* 8 Raekke 4. 2 p. 1923.—A discussion of the life forms of plants, in detailed classification, is followed by an extended account of each form. The principal division is into autotrophic and allotrophic (heterotrophic) plants.—*John W. Harshberger.*

6628. WATERMAN, W. G. **Plant communities of Alpine Park.** *Bot. Gaz.* 80: 188-202. 5 fig. 1925.—The area described is located near Logan Pass in Glacier Park, Montana, and consists of a level tract about 1 mile square between mountain peaks, at an average elevation of 7000 feet. Four physiographic formations were found: A grassy steppe dotted with clumps of conifers, a wet Arctic meadow between low rock ledges, a glacial moraine formation, and a rock terrace formation. The xerarch succession of these communities proceeds from pioneer stages on the glacial moraines, to grass steppe dotted with conifer clumps. The steppe seems to represent a temporary climax with the conifers as a possible later stage under more favorable conditions. The hydrarch succession develops in ponds left by the melting glacier, but does not proceed further than a wet meadow stage.—*Author.*

6629. WEAVER, J. E., HERBERT C. HANSON, AND J. M. AIKMAN. **Transect method of studying woodland vegetation along streams.** *Bot. Gaz.* 80: 168-187. 11 fig. 1925.—In this study a series of wide transects were made at chosen intervals of several miles, along 2 rivers in Nebraska. From the headwaters of a stream downward a distinct sequence of plant com-

munities was noted and the phases of the sequence were correlated to progressive topographical changes in the stream environment. The plant sequence extended from prairie conditions with scattered willows and cottonwoods near the headwaters through flood plain mictia, the chaparral and bur oak communities, up to the forests on the extensive river slopes where red oak and shellbark hickory dominated.—*A. C. Martin.*

6630. WEBSTER, A. D. Planting a peat bog. *Gard. Chron.* [London] 78: 248. 1925.—Details of planting a peat bog in the north of Ireland in 1862 are given with a description of the bog, its vegetation, drainage, plantings and results.—*P. L. Ricker.*

6631. WEDERBAUER, AUGUST. Die Vegetationskarte der peruanischen Anden zwischen 5° und 17°S. [Map of the vegetation of the Peruvian Andes between 5° and 17°S. *Petermann's Mitteil.* 68: 89-91, 120-122. 1922.

6632. WHERRY, EDGAR T. Notes on some local plants and their soil acidity. *Bartonia* 8: 33-34. 1924.—The soil-acidity preference is shown for *Helenium tenuifolium*, observed as an introduction in Pennsylvania, and *Lilium superbum*, *Ophioglossum vulgatum minus*, and *Spiranthes gracilis*, observed native in New Jersey.—*F. W. Pennell.*

6633. WHITE, CHARLES LANGDON. The agricultural geography of the Salt Lake oasis. *Jour. Sci. Lab. Denison Univ.* 21: 117-283. 34 fig. 1925.

6634. WILSON, D. P. The life of the seashore. *Ann. Rept. Trans. Manchester Microsc. Soc.* 1924: 25-31. 1925.—A brief general discussion of the zonal distribution of marine algae and the littoral fauna, with some mention of nutritive interrelations and of structural and functional adaptations.—*C. E. Allen.*

6635. WINKLER, H. Entwicklung, Gegenstand und Aufgabe der Pflanzensoziologie. [The development and scope of phytosociology.] *Ostdeutsch. Naturw.* 1925: 328-330. 1925.

6636. WŁODEK, J., UND K. STRZEMIŃSKI. Untersuchung über die Beziehungen zwischen den Pflanzenassoziationen und der Wasserstoff-Ionen-Konzentration in den Böden des Chochołowska-Tales (Tatra, Poland). [Relation of plant associations to the hydrogen-ion concentration of the soil in the Valley of Chochołów, Tatra Mountains, Poland.] *Bull. Acad. Sci. Cracovie B*, 5-6: 787-834. 1 col. map. 1924 [1925].—The H-ion concentration of over 250 soil samples was determined and some relations to the plant associations and to the geological formations were demonstrated. A map in colors shows these relations.—*K. Strzemiński.*

6637. WYATT, F. A. Factors affecting the productivity of Western Canadian soils. *Sci. Agric.* 6: 69-88. 5 fig. 1925.—The plains of Western Canada consist of a series of plains rising from the western escarpment of the Laurentian Plateau to the foothills of the Rockies with average elevations of 800, 1600 and 3000 feet, respectively. With the exception of a number of hills the entire area has been glaciated, the glacial drift varying from a few inches to several hundred feet. Water erosion has been greatest on the western plain and least on the eastern plain. Because of its responsibility for the nitrogen and organic matter content of the soils, the climate has exerted most influence on the present productive power of these soils. The winter is cold and dry, with a late spring, followed by a hot summer, with long hours of sunshine and plenty of moisture. Of a 12-20 inch annual rainfall, 75% falls during the growing season (April 1st to October 31st). The areas of native vegetation may be divided into 3 groups, first, the short grass, treeless prairies, coinciding with the areas of low rainfall; 2d, the districts of mixed prairie and trees; and 3rd, the wooded areas occupying the districts of greatest rainfall. The crop production areas are closely related to these, although there is some overlapping due to the fact that the districts of lightest rainfall have the longest growing season and highest rate of evaporation. Although there is a wide variation in texture and chemical composition, the soils of these areas are in general high in nitrogen and organic matter and well supplied with mineral plant foods.—*T. G. Major.*

6638. ZENARI, SILVIA. I caratteri della vegetazione in Val Cellina. [Vegetation of the valley of Cellina.] *Archivio Botanico* 1: 101-140, 149-169. 1925.

STRUCTURE, BEHAVIOR, SYMBIOSIS

6639. CHAUDERI, H., UND RAJARAM. Ein Fall von wahrscheinliches Symbiose eines Pilzes mit *Marchantia nepalensis*. [A case of apparent symbiosis between a fungus and

Marchantia nepalensis.] *Flora* 120: 176-178. 2 fig. 1925.—The authors find that the thallus of *Marchantia nepalensis*, under natural conditions, always contains fungus hyphae in the median part of the compact ventral tissue. The infected cells show thickened and pigmented walls. Since thalli cultivated without infection fail to produce sporophytes, the conclusion is drawn that the fungus is essential for normal development. The isolated fungus grows on various nutrient media if carbohydrates are supplied, but no characteristic fructifications have as yet been obtained.—A. W. Evans.

6640. HEINRICHER, E. Zur Frage über die Bestäubung bei den Mistel-Arten *Viscum album* und *cruciatum* Sieb. [Pollination of *V. album* and *V. cruciatum*.] *Berich. Deutsch. Bot. Ges.* 43: 270-278. 1925.—These species of *Viscum* are pollinated both by insects and by wind the latter being the more important as is shown by the following facts: (1) Fruits develop on pistillate plants bagged so as to prevent access by insects. Since fertilization is here necessary for embryo formation this cannot be explained as apogamy. (2) Staminate flowers of *V. cruciatum* hang downwards, and produce dry pollen which sheds easily. (3) No nectar secretion has been observed. (4) Insect visits are irregular.—In *V. album*, with upright flowers, all the pollen ripens at once and is shed quickly. In *V. cruciatum*, with pendulous staminate flowers, the pollen ripens gradually and is shed during the period of a month.—Hilda Joseph.

6641. HERBERT, A. The root parasitism of Western Australian Santalaceae. *Jour. and Proc. Roy. Soc. Western Australia* 11: 127-149. 5 fig. 1924-1925 [1925].—This paper deals with the genera, *Fusanus*, *Leptomeria*, *Choretrum*, and *Exocarpus*, giving their hosts and general physiological relationships.—Wm. Randolph Taylor.

6642. LIESE. Der heutige Stand der Mycorrhizaforschung. [The present situation of mycorrhiza investigation.] *Zeitschr. Forst.- u. Jagdw.* 56: 747-750. 1924.—A short review of Melin's recent works on the mycorrhiza fungi of Scotch pine, *Pinus silvestris*, and Norway spruce, *Picea excelsa*, and on those of birch and aspen. Melin was the first investigator to successfully isolate mycorrhiza fungi and to secure positive results from synthetic cultures. He isolated various fungus symbionts of pine and spruce, mycorrhiza belonging to the Hymenomycetes, which group at present takes front rank as mycorrhizal fungi. Those of aspen and birch also belong to this group. In the case of Scotch pine, the symbiotic relationship is associated ordinarily with raw humus soils. The symbiosis involving the different kinds of Hymenomycetes is mutualistic, being beneficial to the fungus and to the host.—J. Roesser.

6643. McDougall, W. B. Symbiosis in a deciduous forest. II. *Bot. Gaz.* 79: 95-102. 1 fig. 1925.—Under the caption of "antagonistic nutritive disjunctive symbiosis" the author presents illustrations of the destruction of vegetation by animals. The presence of chickens in woodlands results in a marked reduction in number of plants with an increase, however, in number of species present due to the introduction of ruderals. Under the heading "reciprocal nutritive disjunctive symbiosis" a short account of interdependent forms is given.—B. W. Wells.

6644. MARKGRAF, FR. Pflanzensymbiose. [Symbiosis in plants.] *Berliner Klinische Wochenschrift* 1923: 797-800. 1923.

6645. MÉREJKOVSKY, C. DE. La plante considérée comme un complexe symbiotique. [The plant as a symbiotic complex.] *Bull. Soc. Sci. Nat. Ouest France* 3e. ser. 6: 17-98. 9 fig. 1920.—The author attempts to demonstrate the theory he proposed in 1905, according to which the plant is considered as a symbiosis between an animal represented by colorless (non-green) cells, and little microscopic "algues," the chromatophores, which give the plant its characteristic color. The individual cells of the Cyanophyceae constitute in their entirety individual chromatophores and consequently the chromatophores are not, as ordinarily regarded, organs of the cell but organisms capable of independent existence.—A. de Puymaly (transl.).

6646. MÖBIUS, M. Versuch zur Erklärung der Ameisenpflanzen. [The explanation of myrmecophytes.] *Flora* 118-119: 393-398. 1925.—The author attempts to explain the structures accommodating ants [myrmecodomatia] in plants in a manner similar to Becher's gall hypothesis, that is, as structures advantageous to foreign organisms ("fremddienlichen Zweckmässigkeit"). They differ from galls in being formed in response to inherited tendencies and not in response to the stimulus of other organisms. A transition between myr-

mecodomatia and galls is seen in "acarodomatia" where the stimulus exerted by the mites is transmitted, but in a weakened form, to succeeding generations, while there is no transmission in the case of galls. The author has a very wide concept of correlations and adaptations between different organisms that are not necessarily symbiotic.—*Geo. D. Fuller.*

6647. PENNELL, FRANCIS W. The pollination of two tidewater Scrophulariaceae. *Bartonia* 8: 9-11. 1924.—Observations upon *Hemianthus micranthus* (Pursh) Pennell and *Ilysanthes dubia inundata* Pennell, growing on tidewater flats along the Delaware River above Camden, New Jersey, have repeatedly failed to find either with open flowers. Under ideal light and warmth of a September morning no corollas opened, but were dropped entire; yet these plants developed capsules abundantly. Clearly they depend upon self-pollination, as evidently do other small-flowered plants of these tidal flats, as *Eriocaulon parkeri* Robinson and *Isnardia palustris* L. The advantage of self-pollination to plants whose flowers are submerged twice daily is sufficiently obvious.—*Author.*

6648. PROCHAZKA, JAN S. Člověk nepřítel. [Man as an enemy.] 259 p. B. M. Klika: Prague, 1924.—This book deals with the extinction of animals caused by man. The well organized protection of nature is one of the great problems of the future.

6649. ULBRICH, E. Deutsche Myrmekochoren. Beobachtungen über die Vertreibung heimischer Pflanzen durch Ameisen. [German myrmechores. The distribution of plants by ants.] 60 p., 24 fig. Theodor Fisher: Leipzig, 1919.

6650. WEAVER, J. E. Investigations on the root habits of plants. *Amer. Jour. Botany* 12: 502-509. 4 fig. 1925.—Data on rate of root growth and amount of absorption from different soil layers are given. Marked variations in root habit may be induced by environmental changes, notably in amount of water and mineral nutrients in the soil and by competition. Methods have been devised for determining the actual amount of absorbing area (not including root hairs) and comparing it with the transpiring surface. In general, reductions in amount of soil water tend to increase the proportion of absorbing to transpiring surface.—*E. W. Sinnott.*

VEGETATION

6651. BENOIST, RAYMOND. Le végétation de la Guyans français. (suite et fin.) [The vegetation of French Guiana.] *Bull. Soc. Bot. France* 72: 1066-1078. 1925.—Benoist, who visited French Guiana, designated as savannahs the recovered marshes with vegetation consisting mostly of herbaceous plants (especially Cyperaceae and Gramineae). He distinguishes several types: (1) Dry savannahs, encountered in going from the interior to the coast and immediately on leaving the forest, are formed of extensive areas of tufted grasses separated by streamlets bordered by brush, trees, "Bâche" palms, and interspersed with small stunted shrubs with branches often bearing epiphytes (Bromeliaceae and Orchidaceae). The vegetation of the dry savannahs attains its maximum in May, cattle at that time grazing there freely. At the close of the rainy season Gramineae and Cyperaceae flourish. In October, the vegetation being dry, these savannahs take on a uniform gray appearance. The inhabitants start fires there—the annual fires which deform the trees. (2) The middle savannahs are situated nearer the coast, where the land is flat but protected from inundation. In July these savannahs are covered with a multitude of annual plants with vividly colored flowers. The Cyperaceae with narrow and but slightly sclerified leaves predominate. The perennial herbs are relatively few. The Utriculariaceae and *Naterophila* develop very rapidly at places where the water has subsided. (3) The enclosed ("enclavé") savannahs in the forest appear rather different in their floristic composition. (4) The low ("basses") savannahs lie especially in the vicinity of streams. These are the permanent marshes which dry out only during a very short period in the dry season. The flora therein is very scanty. (5) In French Guiana, designated under the name "pri-pri" or "pinatière," is the savannah inundated during the rains but with the center almost free of vegetation when it is dry. (6) The quaking savannahs are near the sea and rest upon soft mud. The vegetation forms a sort of raft due to the entanglement of the plant roots. (7) Certain savannahs of French Guiana are due to the intervention of man. These occur either at points where the Indians have established their agriculture or where attempts at colonization have been made. The moor cleared up is cultivated only for 2-3 years; after this it is considered as exhausted and abandoned. Then, if the ani-

imals come to graze there and the thorny plants are destroyed, there is rapidly established a true savannah. Otherwise, trees and shrubs become established. Upon the soft mud laid bare at low tide and covered at high tide grow the red and white mangroves associated with small trees. Upon the sands among the rocks of the shore creeping herbaceous plants and shrubs come to grow; this is the zone of high pasturage.—There are given several lists of plant associations of the various savannah types; unfortunately the author was able to traverse only very rapidly the regions discussed and often at an unfavorable season. He was therefore able to present only fragmentary observations.—*H. de Gayets (transl.)*.

6652. EDWARDS, ALBERTO. Una nueva carta de Geografía botánica chilena. [A new map of Chilean botanical geography.] *Rev. Chilena Hist. Natur.* 25: 124-126. 1921.—Attention is called by Edwards to the preparation by his office of a new map showing the various botanical zones which occur in Chile. Although the map was prepared primarily for agricultural reasons, it is based upon a scientific survey of the flora. Chile is divided into 9 zones, of the scope and characteristics of each of which a brief statement is given: (1) Zone of the High Plateau; (2) Zone of the Desert; (3) Zone of Paposo; (4) Zone of Coquimbo; (5) Central Zone; (6) Zone of the Southern Forests; (7) Zone of the Magellan Forests; (8) Andine Zone; and (9) Patagonian Zone.—*F. W. Pennell*.

6653. GARDNER, C. A. The forest formations of Western Australia. I. The Karri forest. *Australian Forst. Jour.* 6: 52-55. 1923.—This forest is the richest of the region and is confined to that part of the extreme south and south-west possessing a rainfall of 35 inches or more, rather evenly distributed throughout the year. While the "karri" (*Eucalyptus diversicolor*), up to 300 feet high, is the most abundant tree, many other species of the same genus occur and in the 2nd lower story are species of *Agonis*, *Banksia*, *Casuerina*, *Acacia*, and *Albizia* 30-40 feet in height. *Pteris aquilina* abounds in open spaces.—*G. D. Fuller*.

6654. GARDNER, C. A. The forest formations of Western Australia. II. The jarrah forest. *Australian Forst. Jour.* 6: 104-108. 1 fig. 1923.—This formation is developed with a rainfall of 25 inches or over but seems to be rather strictly limited to light, poor, sandy soil. The main species, "Jarrah" (*Eucalyptus marginata*), attains a height of 75-90 feet and often forms 95% of the large trees. The stand is close, the crowns of the trees clearing each other, the foliage being perpendicular, casting light shade and permitting the development of many smaller trees such as species of *Casuerina*, *Banksia*, and *Parsoonia*. The wood of the jarrah is dense, hard, durable, of a red color, and is very valuable for construction and furniture. It was formerly often called Australian mahogany.—*G. D. Fuller*.

6655. GARDNER, C. A. The forest formations of Western Australia. IV. The Wandoo forest. *Australian Forst. Jour.* 6: 296-300. 1923.—This is a sclerophyll forest developed in the vicinity of the Darling Range of mountains, with a periodic rainfall of 20-30 inches. The "wandoo" trees are *Eucalyptus redunca* and allied species, 50-80 feet tall, with pale, hard, tough wood; with them are associated the "rasberry jam" (*Acacia acuminata*), the she-oak (*Casuerina Huegeliana*) and the Sandalwood (*Santalum cynorum*).—*Geo. D. Fuller*.

6656. GARDNER, C. A. The forest formations of western Australia. V. The salmon gum forest. *Australian Forst. Jour.* 7: 38-45, 120-123. 5 fig. 1924.—This is a sclerophyllous forest occurring in regions where the rainfall is mostly during the colder portions of the year and amounts to 12-20 inches. It reaches its best expression in alluvial flats or shallow depressions. The forest is rather open, with shrubby undergrowth passing into mixed shrub and grass with a great variety of both trees and shrubs. The height of the trees of the best areas averages 70 feet, the trees branch at $\frac{2}{3}$ of their height, and the rather small vertical leaves cast little shade. The salmon gum (*Eucalyptus salmonophloia*) is the chief tree, although other species of the same genus abound. Descriptions with lists of species are given for the various types of this forest, including its degeneration to scrub as the dry interior is approached.—*Geo. D. Fuller*.

6657. GARDNER, C. A. The forest formations of Western Australia. VI. The mulga bush. *Australian Forst. Jour.* 7: 256-259. 1924.—This is one of the most widely spread formations in Western Australia, occurring where the rainfall is 12 inches or less and without definite periodicity. It is a scrub formation with widely branched trees 10-12 feet high and soil that is usually rather bare except directly after a period of considerable rainfall. *Acacia*

aneura ("mulga") is the most abundant species but with it are associated species of *Ilakia*, *Grevillea* and *Eremophila*, of similar growth habit. The foliage is small and needle-like. The spinifex (*Triodia pungens*), with its tuft habit, occurs in open spaces; and in favorable seasons the soil is covered with a carpet of small grasses and brilliantly colored flowers such as those of the "daisies" which are species of *Helipterum* and *Helichrysum*.—Geo. D. Fuller.

6658. GARDNER, C. A. The hardwood forests. Australian Forest. Jour. 6: 185-191. 1923.—Western Australia, the area under consideration, has an area of 900,000 sq. miles and a rainfall of 6-70 inches. Within it the author distinguishes: (1) Sclerophyllous forest with 20-60 inches of periodic rainfall, in the south-west of the region, with a good stand of large eucalyptus trees such as the "jarrah" (*E. marginata*) and the "karri" (*E. diversicolor*). The trees reach a height of 200-280 feet with small trees 40-60 feet forming a lower storey and a rich undergrowth of shrubs and herbs.—(2) Savannah woodlands with 15-20 inches of rain. The trees are 50 feet or less in height and comprise species of *Eucalyptus*, *Angonis* and *Acacia*, with grassy undergrowth.—(3) Mallee and mulga bush, having 6-8 inches of rain. This is an open scrub with small eucalypts (mallees) and acacias (mulga).—(4) Savannah with low rainfall. The trees are here low and scattered and the dominant vegetation is grassy. Notes are given on the variation of these types and on their economic possibilities.—Geo. D. Fuller.

6659. HERBERT, D. A. Plant life on Mount Maquilung. Philippine Agric. 13: 183-197. 1924.

6660. HICKEN, CRISTÓBAL M. Las Himenofilaceas argentino-chilenas y los "continentes pacíficos." [The Hymenophyllaceae of Argentina and Chile, and the "Pacific continents."] Rev. Chilena Hist. Natur. 25: 253-262. Map. 1921.—American Hymenophyllaceae are especially developed in 3 centers, a Caribbean, an Equatorial, and a Patagonian. Each of these areas has certain affinities to corresponding areas in the Old World, a connection that is much stronger across the Pacific than across the Atlantic Ocean. Quoting from an unpublished paper of his own which reviews this problem for all groups of plants, the author shows that in spite of the Pacific being thrice as wide the Trans-Pacific connections of the vegetation are 8.5 times as great as those of the Trans-Atlantic; although, if distance alone were involved, the latter communication would have been 64 times as probable. To explain such affinities he postulates the continued existence during Mesozoic and early Tertiary time of 3 continents lying across the present bed of the Pacific Ocean: Calijapia, uniting California with Japan; Caribindia, uniting the Caribbean lands with the East Indies; and Magezelia, uniting the Magellan region with New Zealand. Of these continents Magezelia sunk first and farthest, then Caribindia, while last to sink and most persistent was Calijapia. By considering the present floras and faunas of these Trans-Pacific areas as each having survived after the submergence of the intermediate areas beneath the Ocean, the author claims that the problems of distribution around the Pacific are best solved. He considers in detail the dispersal of various Hymenophyllaceae, and shows how this is explained by his hypothesis.—F. W. Pennell.

6661. LENOBLE, F. Sur la distribution géographique d' *Ononis cenisia* L. dans les Alpes françaises. [Distribution of *O. cenisia* in the French Alps.] Bull. Soc. Bot. France 72: 987-991. 1925.—*Ononis cenisia* has been stated to be a species of the high Alpine mountains, which may descend into the subalpine zone. The author disagrees with this opinion. In fact, he has found it, and often abundantly, at 320 m. and 108 m. altitude in the mountains of Matin (Drôme), the low mountains of Diosis, etc. It is then a species of the low dry mountains of the south rather than an Alpine plant.—R. Douin (translated).

6662. OSTENFELD, C. H. Flowering plants and ferns from North-Western Greenland. Collected during the Jubilee Exped. 1920-22 and some remarks on the Pythogeography of North Greenland. Meddel. Grønland 68: 1-42. 1925.—The paper contains: (1) a list of the 97 species of vascular plants collected in northwestern Greenland in 1921 by J. Noe Nygaard and Laue Koch. No new species or new combinations are made. (2) Phytogeographical notes on the flora of North Greenland, consisting of 125 species of vascular plants. All these are tabulated into 7 different areas of North Greenland and for comparison their occurrence in Arctic American Archipelago, W. Greenland south of 76°, E. Greenland south of 76° and Arctic Europe are also given. Of the species tabulated 3 are endemic to Greenland, 6 show

an eastern area of occurrence outside Greenland, 31 a western range, and the rest (85) have a circumpolar range. Thus the flora of North Greenland has a marked western character. The author considers the flora of North Greenland as partly surviving from preglacial times somewhere in Greenland, and partly as having migrated after the ice age and then, with a few exceptions, migrated from the west.—*Author*.

6663. OSTENFELD, C. H., AND G. NYGAARD. On the Phytoplankton of the Gatun Lake, Panama Canal. Dansk. Botan. Arkiv 4¹⁰: 1-16. 20 fig. 1925.—A report on some plankton samples collected by the senior author in the Gatun Lake, Panama, in Jan., 1922. In accordance with the uniformity of temperature and contents of oxygen of the water the plankton is practically uniform from surface to bottom (20 m). The phytoplankton is rather poor in species, Myxophyceæ and Chlorophyceæ dominating. No *Anabæna* is present in the samples. Flagellates are poorly represented. Very remarkable is the scarcity of diatoms, only a species of *Melosira* being a true plankton organism. Striking is the absence of the genera *Scenedesmus* and *Pediastrum*; on the other hand desmids of the genus *Staurastrum* are among the dominant species. On the whole the plankton of the Gatun Lake has much the same character as that of the large lakes of Guatemala, and has some resemblance to the plankton of the large African lakes and to the artificial lake near Melbourne (investigated by G. S. West), but hardly any to the Indo-Malayan and Ceylon lakes. The following are new: *Peridinium gatunense* n. sp., *Staurastrum sparsidentatum* n. sp., *S. ostensfeldii* n. sp., *S. anatinum* var. *convergens* n. var., and *Microcystis robusta* (H. W. Clark) n. comb., Nygaard being the authority.—*Author*.

6664. PRODAN, I. Flora nisipurilor din România. [Rumanian sandflora.] Buletinul Agric. 6 (Supl.): 1-92. 14 pl. 1925.—On the basis of previous work and his own researches the author studies the ecological and genetical relations of the Rumanian sandflora of Donauebene and Schwarzen Meer-Küste. After certain economic considerations the author lists the mosses, Pteridophytes and Phanerogams growing in the sand soils.—*Emil Pop (transl.)*.

6665. PRSEMETCHII, Z. Repartizarea speciilor forestiere din Basarabia. [Distribution of forest species in Bessarabia.] Revista Pădurilor 35: 659-685. 1923.—After a short morphological and phytogeographical description of Bessarabia, the author names the various species of wood, giving their distribution.—*Emil Pop*.

6666. REGEL, KONSTANTIN. Die Pflanzendecke der halbinsel Kola Lapponia Varsugae. [The vegetation of Kola peninsula, Lapland.] Mem. Facult. Sci. Univ. Lithuanie 1922: i-xxiv + 1-246 p. 12 fig. Kaunas, 1923.

6667. SCHERRER, MAX. Vegetationsstudien im Limmattal. [The vegetation of Limmattal.] Veröff. Geobot. Inst. Rübel Zürich 2: 1-115. 1925.—This valley lies between Zurich and Killwangen (Switzerland). In the introduction, the topography, climate, the distribution of the grape and the occurrence of thermophile plants are discussed. The vegetation includes 3 types of meadows: Molinietum, Brometum and Arrhenatheretum. These associations are discussed as to subassociations, facies, aspects, distribution, habitat and succession.—*Ernest Furrer (transl.)*.

6668. SENNEN (le Frère). Le Kosteletzkyia pentacarpa (L.) Led. en Espagne, suivi de réflexions et de quelques données phytogeographiques. Bull. Soc. Bot. de France 72: 1078-1084. 1925.—In this note, Sennen gives a certain number of names from his catalogue of the Flora of Barcelona published in 1918, and not found in previous works. He publishes besides a great number new to the region. Among these is *Kosteletzkyia pentacarpa* L. which he collected in the vicinity of clear, deep, brackish waters. He lists *Scabiosa graminifolia*, found near "Ntra. Sra. de Lourdes, de la Nou," *Corydalis claviculata*, *Leonurus cardiaca*, *Crocus nudiflorus*, and *Aspidium lobatum*, which he has gathered in Cerdagne; and *Rumex longifolius*, encountered in hundreds of places far from habitations.—*H. des Gayets (transl.)*.

6669. STAMP, L. DUDLEY. The vegetation of Burma from an ecological standpoint. ii + 58 p. 28 pl., 12 fig. Thacker, Spink & Co.: Calcutta, 1924.—Geology, elevation and climate are discussed as the groups of factors governing the distribution of vegetation. The climate is essentially monsoon with the rainfall occurring chiefly from June to October, 3 rainfall regions being distinguished: (1) The dry belt, with 20-40 inches of rain, too dry for forests; (2) the monsoon region with 40-80 inches of rain and a forest which is deciduous and includes the teak (*Tectona*); and (3) the wet area with over 80 inches of rain resulting in an evergreen

rain forest. These climatic areas are subdivided and their vegetation is described and mapped. A bibliography of 50 titles is appended.—*Geo. D. Fuller.*

6670. TANSLEY, A. G. The vegetation of the southern English chalk (Obere Kreide-Formation). Veröff. Geobot. Inst. Rübel Zürich 3: 406-430. 1925.—The variations in the soils of this region range from those that are very shallow, dry and alkaline to others that are decidedly acid due to leaching and to humus accumulation on the surface. Hence the vegetation embraces calcicoles, species indifferent to soil reaction and species characteristic of acid soils. The types of vegetation are those of (1) bare chalk rock, (2) chalk talus, (3) chalk grassland, (4) chalk scrub, and (5) chalk woodland. The associations of each type are discussed, and their composition is analyzed as to constancy, abundance, exclusiveness, sociability and dynamic behavior. Among some of the associations are: Chalk heath with *Calluna vulgaris*, *Agrostis tenuis* and *Potentilla erecta*; chalk bushland with species of *Cornus*, *Rubus*, *Prunus*, *Rosa*, etc.; and woodlands of *Fraxinus*, *Taxus* and *Fagus*. The author emphasizes the importance of the developmental viewpoint in such studies as this.—*Geo. D. Fuller.*

6671. UPHOF, J. C. TH. Dendrologischen Notizen aus dem Staate Florida. [Dendrological notes from Florida.] Mitteil. Deutsch. Dendrol. Ges. 35: 219-225. 2 pl., 5 fig. 1925.—A description is given of trees and shrubs of the central, eastern and the northern parts of Florida. Along the Indian River on some of the shell mounds is a vegetation consisting of species of the tropics along with others from the north.—*Author.*

FLORISTICS

6672. BENEDICT, R. C. The mosquito fern. Amer. Fern. Jour. 13: 48-52. 2 pl. 1923.—Discussion of the name and the habits of *Azolla*.—*E. R. Walker.*

6673. BORZA, A. Floarea Lotus dela Oradea. [The lotus-flower of Oradea.] Revista stiintifică "V. Adamachi" 11: 20-22. 1924.—The author shows the conditions of vegetation of *Castalia Lotus* (L.) Tratt. in the only place in Europe where it grows spontaneously (thermal waters near Oradea, Rumania) and points out the correct one among the numerous synonyms. He expounded the theories relating to the origin of the plant in that region and asks for its protection of the State.—*Emil Pop.*

6674. BROCKMANN-JEROSCH, H., UND M. BROCKMANN-JEROSCH. Betrachtungen über Pflanzenausbreitung. [Observations on plant distribution.] Verh. Naturf. Ges. Basel 35: 382-404. 1925.

6675. CHASSAGNE, MAURICE. Les "Biflora testiculata" L. et "radians" Bieb. en France, leur extension, principalement en Auvergne, avec des considérations sur la marche actuelle de la végétation méditerranéenne. [Biflora testiculata and B. radians in France.] Rev. Sci. Bourbonnais 1924: 165-176. 1924.

6676. CLELAND, J. B., J. M. BLACK, AND L. REESE. The flora of the north-east corner of South Australia, north of Cooper's Creek. Trans. and Proc. Roy. Soc. South Australia 49: 103-120. 1 fig. 1925.—The vegetation is divided into 3 main types: (1) That of the flat-topped hills and "gibber" plains (covered with a mantle of loose stones) and consisting chiefly of *Bassia lanicuspis*, a hirsute "bluebush," a few inches high, with Mitchell grass (*Astrebla pectinata*) as the predominant grass springing up after rains; (2) that of the more or less shifting sandhills, usually very meagre and consisting of xerophytic shrubs (spp. of *Acacia*, *Cassia*, *Grevillea*, *Scaevola*, etc.), with a few tufted grasses (*Spinifer*, *Triodia*); (3) that of the water-courses and flooded flats, including *Eucalyptus rostrata* (red gum), *E. microtheca* (Coolebah), several spp. of *Acacia*, and the red mulga (*A. cyperophylla*), which are most abundant, shrubs belonging to the genera *Grevillea*, *Hakea*, *Cassia*, *Heterodendron*, etc., the 3 "nardoos" (*Marsilia* spp.) in dry claypans, etc.; 292 species are listed, *Cyperus Clelandii*, and *Ranunculus pentandrus* (described elsewhere) being new to science, and probably also a species of *Eremophila* and of *Lepidium*.—*Geoffrey Samuel.*

6677. DAVEAU, J. Erythrochiton Lindenii Planchon et Linden. Bull. Soc. Bot. France 72: 829-831. 1925.—*Erythrochiton Lindenii*, discovered in 1840 by Linden in the gorges near Teapa, State of Tabasco, Mexico, had been collected, in 1790, on the isthmus of Panama by Louis Née. Two collections of the plant are preserved in the herbarium of the University of Montpellier, together with many other plants collected by Née.—*A. Tronchet (transl.).*

6678. DEAM, CHARLES C. **Flora of Indiana.** On the distribution of the ferns, fern allies and flowering plants. Proc. Indiana Acad. Sci. 34: 39-53. 1925.—This account of the flora of the state credits it with 1062 species of vascular plants of which 293 came from the north and 270, 56 and 21 from the south, west and east, respectively. Three species and 2 varieties are endemic, and 200 introduced. Lists are given of the species in these and similar categories and the chief botanical subdivisions of the state indicated. A bibliography of 21 titles is appended.—*Geo. D. Fuller.*

6679. DOMIN, KAREL. Mydlice bazalkovitá (*Saponaria ocimoides* L.), nová a památnárostlinakvěteny československé. (Geobotanický rozbor jejího naleziště, celkového areálu a úvaha o jejím významu pro vývoj české květeny.) [The occurrence of *S. ocimoides* in Bohemia and its relation to the flora.] Rozpr. II. Tr. Ces. Akad. Ročn. 33²¹: 1-18. 1924.—The author examines the flora about Malé Vselisy where *Saponaria ocimoidis* is found. It seems to be a xerotherm occurring on rocky calcareous substratum. It is a montane species of Southern Europe but does not seem to be indigenous to the locality in question. Its importance in the Bohemian flora is evaluated.—*Courtesy of Preslia (transl.).*

6680. DOMIN, K. Štírův důl u Krucemburka. Příspěvek k poznání vegetačních poměrů Ceskomoravské pahorkatiny. [The flora of Ceskomoravska vysocina.] Věda Přírodní 4: 250-253. 1923.—Although the vegetation of the region is in general very monotonous and poor, an outcrop of Cretaceous rock affords a habitat for a remarkable group of plants here described.—*Courtesy of Preslia (transl.).*

6681. EMBERGER, L. Le domaine naturel de l'arganier. [The natural range of the arganier.] Bull. Soc. Bot. France 72: 770-774. 1925.—*Argania sideroxyylon* (Sapotaceae) is found almost exclusively in Morocco. Its southern limit is one of minimum humidity consisting of a line from Oued Noun along the crest of the Anti-Atlas. It reaches the Massif du Djebel, being most abundant in the valley of the Sous. Its eastern limit seems to be the isotherm of the lower limits of snow on the High Atlas. Other limiting stations are indicated and attention is drawn to the fact that the tree is abundant within the limits of its range, occurring on a great diversity of soils.—*J. Beauverie (transl.).*

6682. GADECEAU, E. Étude sur quelques plantes adventices constatées à Nantes et aux environs surtout pendant la guerre 1914-1920. [Adventitious plants established near Nantes during the war, 1914-1920.] Bull. Soc. Sci. Nat. Ouest France, 4e ser. 1: 67-70. 1921.—The author demonstrates the importance of noting adventive species as soon as they arrive in a region in order to note the length of time required for their naturalization. He lists for the region studied: *Lepidium Draba*, *L. perfoliatum*, *Sisymbrium pannonicum*, *Silene noctiflora*, *Tribulus terrestris*, *Trifolium elegans*, *T. hybridum*, *Potentilla norvegica*, *Conyza ambigua*, *Artemisia Tournefortiana*, *Matricaria discoidea*, *Centaurea melitensis*, *Pterotheca nemausensis*, *Xanthium spinosum*, *Amsinckia angustifolia*, *Datura Tatula*, *Salvia verticillata*, *Amarantus albus*, *Chenopodium hircinum*, *C. leptophyllum*, *Urachne trichotoma*, *Elymus canadensis*.—*A. de Puymaly (transl.).*

6683. GANDOGER, MICHEL. Plantes du Spitzberg. Bull. Soc. Bot. France 72: 1042-1045. 1925.—The flora of Spitzbergen is quite different from that of Swedish and Russian Lapland, Nova Zembla, Wrangel and Greenland; it apparently contains about 120 species, of which a certain number are endemic. The author lists the plants of Spitzbergen preserved in his herbarium and those collected by Schäfer at King Bay (Lat. 79°) in 1922.—*H. des Gayets (transl.).*

6684. GARDNER, C. A. Botanical notes: Kimberly Division of Western Australia. Western Australia Forests Dept. Bull. 32. 1-105. 18 pl., map. 1923.—Following a discussion of the general ecological conditions, the plant formations are described. Each of 8 associations are discussed, with data on location, topography, soil, and climate, and a list of plants of economic importance, including trees, forage and poisonous plants. The associations recognized are savannah woodlands, river forest, mangrove forest, northern sclerophyllous woodlands, littoral forest, grasslands, pindan, and swamps. Field notes are given on many species, 20 being new. These are *Cycas lane-poollei*, *C. basaltica*, *Livistona eastoni*, *Borya subulata*, *Grevillea latifolia*, *G. viscidula*, *Loranthus kimberleyensis*, *L. maritima*, *Jacksonia argentea*, *Alysicarpus cheeli*, *Fugosia pulchella*, *Hibiscus superbus*, *Hibbertia kimberleyensis*, *Barringtonia*.

tonia sphaerocarpa, *Terminalia fitzgeraldi*, *T. cunninghamii*, *Solanum vansittartensis*, *Utricularia kimberleyensis*, *Hypoestes suaveolens*, and *Mitrasacme foliosa*.—E. N. Munns.

6685. GOOD, RONALD. On the geographical distribution of the Styliaceae. *New Phytol.* 24: 225-240. 3 fig. 1925.—The Styliaceae show a discontinuous distribution of a type that indicates a previous connection, not necessarily a complete land bridge, between New Zealand and South America across the South Pacific. The Australian elements are much the most successful of the family at the present time. The distribution of *Styidium* shows a close correlation with average rainfall. It is slowly increasing its generic area. The primitive genus *Oreostyidium* is a good example of a monotypic endemic genus which is a relic.—I. F. Lewis.

6686. GOODING, L. N. An interesting area of limber pine extending into southwestern Nebraska. *Jour. Forest.* 21: 175-176. 1923.—An area of limber pine (*Pinus flexilis*) exists in the extreme southwestern corner of Nebraska near the Union Pacific Railroad, and extends about 35 miles into adjacent Wyoming and Colorado. *Juniperus scopulorum* and *Pinus ponderosa* are associated. The limber pine extends downward to elevations of 5000 feet or less. Growth is excellent and reproduction extensive.—Philip C. Wakeley.

6687. HARD AV SEGERSTAD, FR. Sydsvenska florans vaxtgeografiska huvudgrupper. [The geographical classification of the flora of Southern Sweden.] 244 p., 407 fig. Forlagsaktiebolagets i Malmo Boktryckeri, 1924.—See also Bot. Absts. 15: Entry 1493.

6688. HEDIN, SVEN. In: Southern Tibet. Discoveries in former times compared with my own researches in 1906-1908, with list of flowering plants from Inner Asia. P. 25-100. 8 pl. Lithographic Institute, General Staff, Swedish Army: Stockholm, 1922.—In the plant list, to the names of each species gathered by the explorer are added the place and date of its publication and the locality where it was collected. Taxonomic notes and the geographical area of the species follow. There are 8 plates representing the new and critical species.—John W. Harsberger.

6689. HEGI, G. Alpenflora: Die verbreitetsten Alpenpflanzen von Bayren, Oesterreich und der Schweiz. [The most widely distributed alpine plants of Bavaria, Austria and Switzerland.] 5th. ed. 79 p. J. F. Lehmann: Munich, 1922.

6690. KOTILAINEN, MAUNO J. Beobachtungen über die Moosvegetation und Moorsflora in NW-Enontekio in Lappland. [Moss vegetation and moss flora in Lapland.] *Acta Soc. Fauna et Flora Fennica* 55: 1-69. 1924.—The author made a field trip to some fell fields of northern Finland near Lake Kilpisjärvi in 1920 and describes the conditions encountered. Collections resulted in 177 species, 7 of which were new. The conditions governing the moss-vegetation are discussed. Shade seems to be less favorable for mosses here than in central Finland. Mosses seem to thrive because climatic factors limit the competing forest vegetation. Both mosses and "ijeld" plants are often unsuccessful in competition with forest vegetation. The timber line is therefore a tension line for these types. This tension line is the same whether the tree limit is climatic or edaphic. The author gives a classification of the occurrence of mosses, which is based on biotic relationships.—From abst. by author (transl.)

6691. KULCZYŃSKI, S. Das boreale und arktisch-alpine Element in der mitteleuropäischen Flora. [The Boreal and Arctic-alpine element in the flora of central Europe.] *Bull. Acad. Sci. Cracovie B*, 1-10: 127-214. 41 maps. 1923 [1924].—The author discusses the distribution of about 300 species, belonging to the Boreal and Arctic-montane element, which inhabit central and southern Europe. Among them are distinguished species which in the Pleistocene period migrated from central to northern Europe, and those which reached Europe in the same period, migrating in an opposite direction, from the north. The latter are either of American or of Asiatic origin. The distribution in Europe of the 2 elements is different; species of American origin penetrate farther southward than those of Asiatic origin. Their different distribution favors the theory of non-simultaneous glaciation in western and in eastern Europe. As to the central European species which reach the north, they penetrate farther to the northwest (America) than to the northeast (Siberia).—Author (translated from the Polish summary.—Hanna Czeczott).

6692. KULKARNI, L. B., AND S. R. GODBOLE. A study of some Indian grasses and grasslands. *Mem. Dept. Agric. India Bot. Service* 14: 1-57. 1925.

6693. LASSIMONNE, S. E. Sologne et Bourbonnais. Bull. Soc. Bot. France 72: 778-781. 1925.—Certain plants are absent or rare in one of these regions in France and present in the other. Among those whose distribution is detailed are *Pinguicula lusitanica*, *Lobelia urens*, *Ranunculus lenormandi*, *Arnica montana* and several less notable species.—*H. des Gayets (transl.)*.

6694. McNAIR, JAMES B. The geographical distribution in North America of poison ivy (*Rhus toxicodendron*) and allies. Amer. Jour. Botany 12: 338-350. 1 fig. 1925.—This species occurs in every province of Canada bordering on the U. S. A., in every state of the union, in most states of Mexico, and in Bermuda. It ranges from sea level to about 6000 feet. It is absent in desert and high mountain regions.—*E. W. Sinnott*.

6695. McNAIR, JAMES B. The geographical distribution of poison sumac (*Rhus vernix* L.) in North America. Amer. Jour. Botany 12: 393-397. 1 pl., 1 fig. 1925.—This species is found in Quebec and Ontario, and in all the states east of the Mississippi except Kentucky, Tennessee and West Virginia; 4 stations are recorded from states west of the Mississippi, none of them very far from the river itself.—*E. W. Sinnott*.

6696. MAGNEL, L. Notes phytogéographiques. I. Découverte en Belgique du "Potamogeton Zizii, M. et K." II. Une nouvelle station du "Lathyrus palustris L." III. Notes diverses. Bull. Soc. Roy. Bot. Belgique 2^e Sér. 56: 161-163. 1924.

6697. MAIRE, R. Troisième contribution à l'étude de la flore du Sahara occidental. [Flora of the western Sahara.] Bull. Soc. Hist. Nat. Afrique du Nord 16: 87-97. 1925.

6698. [MAL'TSEV, A. I.] Мальцев, А. И. Несколько слов о катране—*Crambe tatarica* Jacq. [A note on *Crambe tartarica* Jacq.] Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. and Plantbreed.] 13³: 91-92. 1922-1923 [1923].—A few characteristics of this typical plant of the Kamenaja Stepj are described.—*M. Demerec*.

6699. MARIE-VICTORIN, FRÈRE. Études floristiques sur la région du lac Saint-Jean. [Floristic studies in the Lake St. John region.] Contrib. Lab. Bot. Univ. Montréal 4: 1-174. 28 fig. 1925.—The geological, physiographical and meteorological characteristics of the region are first dealt with. The features considered to have a bearing on the making of the flora are (1) the acid nature of the precambrian rocks underlying the basin; (2) the extensive outcrop of anorthosite towards Grande-Décharge; (3) the calcareous Ordovician rocks bordering the south shore of the lake; (4) the intrusion of marine waters in the basin of the lake during the Champlain period; (5) the extension of sand dunes; (6) the burning out of the forest in 1869; (7) the low mean temperature contrasted with the high maxima; and (8) the wide seasonal difference in the water-levels of the lake. Previous work on the flora of the district is reviewed, and an extensive study of Michaux's voyage is made. Then follows the journal of the author's own expeditions, with taxonomic, distributional and ecological problems discussed as they occur in chronological sequence. The journal is supplemented with a carefully drawn list of the plants collected: Hepatics, Mosses and vascular plants, arranged in systematic order. This list includes the following new combinations: *Drepanocladus capillifolius* Warnst. f. *fallax* (Renauld), *Drepanocladus paternus* (Sanio). The occurrence of a coastal-halophytic relic flora in the Lake St. John basin and such species as *Ammophila breviligulata*, *Triglochin maritima*, *Lathyrus maritimus* are traced to a marine invasion having taken place in the Champlain period through the Saguenay Fjord. Additional evidence is furnished by a similar relic flora on the Great Lakes and on some smaller lakes in the state of New York. The last chapter deals with the association on quaternary sands of *Pinus Banksiana*, *Comptonia peregrina* and *Solidago puberula*. The 3 species are discussed separately with regard to their environment, and a full-page diagram shows their interrelation, zonation, and mosaic arrangement.—*Author*.

6700. NEVOLE, JAN. Floristické a fytogeografické poznámky z okolí Bogdanu na Podkarpatské Rusi. [The flora of the environs of Bogdan, Sub-Carpathian Russia.] Sborn. Kl. Přírod. v Brně. 7: 1-11. 1924.—The phytogeographic conditions about Bogdan are described and a list of species is given.—*Courtesy of Preslia (transl.)*.

6701. NOVÁK, FRANT. A. Le Vysoká dans les Petits Carpathes. [Vysoka in the Little Carpathians.] Bull. Internat. Acad. Sci. Bohème 1922: 1-2. 1922.—Vysoka, with an elevation of 754 m., is the highest peak in the Little Carpathians. On the calcareous rock of its summit

is a glacial relic association of arcto-alpine plants, including *Arabis alpina* and such species as *A. arenosa*, *A. petraea*, *Cystopteris fragilis*, *Poa bodensis*, *Moeringia muscosa*, *Geranium lucidulum*, *Draba aizoides*, *Teucrium montanum* and *Dianthus lumnitzeri*.—Geo. D. Fuller.

6702. NOVÁK, F. A. Lokalita květele kručinkolistého (*Linaria genistifolia* Mill.) v Čechách. [Localities of *L. genistifolia* in Bohemia.] Věda Přírodní 4: 100-105. 1923.—In Czechoslovakia this species is found located with a pontic ("pontico-pannonienne") association along with species typical of the steppes or along with ruderals. The details of the distribution in Bohemia near Caslav are given.—*Courtesy of Preslia (transl.)*.

6703. OSBORN, T. G. B. On the ecology of the vegetation of arid Australia. No. 1. Introduction and general description of the Koonamore reserve for the study of the saltbush flora. Trans. and Proc. Roy. Soc. South Australia 49: 290-297. 1 pl. 1925.—Previous work on the arid flora is reviewed and the seriousness of the general failure of woody plants to regenerate, together with the regressive state of many of the communities under the action of grazing by stock, is discussed. This is instanced by the fact that considerable areas of valuable fodder plants, mainly *Atriplex vesicarium* and *Kochia sedifolia* communities, have been replaced by annuals among which species of *Bassia* are most prominent, with the secondary effect that large areas become open to the action of erosive forces, always severe in an arid climate. A brief description is given of an area of 1500 acres, generously set aside and enclosed with a rabbit-proof fence by the owners of a typical northern sheep-station 1100 square miles in extent. This will serve as an area where the natural regeneration of the flora when freed from the influence of grazing by stock and vermin will be studied.—*Geoffrey Samuel*.

6704. OSBORN, T. G. B. The flora and fauna of Nuyts Archipelago and the Investigator Group No. 18. Notes on the vegetation of Flinders Island. Trans. and Proc. Roy. Soc. South Australia 49: 276-289. 3 pl. 1925.—The island (9000 acres) is of limestone formation with a winter rainfall of 15 inches and strong south-westerly winds. The vegetation is divided into 5 main types: (1) Woodland and scrub with a climax of dense woodlands of *Melaleuca parviflora*; (2) cliffs, with low shrubs, a number of shrubby or straggling *Chenopodiaceae*, and a few grasses; (3) sand dunes with *Cakile maritima* and *Atriplex cinereum* as littorals, *Spinifex hirsutus* as the pioneer dune plant, passing over to low shrubs on further stabilization; (4) Ruderals and communities on pasture land formed by burning the natural scrub, the majority being aliens; (5) Gypsum salt swamps, with a dominant vegetation of *Arthrocnemum halocnemoides* var. *pergranulatum* passing over to *Mesembryanthemum*, various chenopods, and finally to *Melaleuca halmaturorum*, the zonation often being very abrupt. A list of 108 species is given, with an analysis of the flora on Raunkiaer's system, and a discussion of the effect of human disturbance on the vegetation. This is manifested by the naturally high percentage of Nanophanaerophytes and Chamaephytes being reduced, with a consequent raising of the Therophyte number, and thus a tendency towards the development of a more arid type of succession.—*Geoffrey Samuel*.

6705. PODPĚRA, J. Geobotanický rozbor nálezu *Artemisia laciniata* Willd na Moravě. [The discovery of *A. laciniata* in Moravia.] Sborn. Klubu Přírod. 6: 1-12. Brno, 1924.

6706. REDEKE, H. C. (Editor.) Flora en fauna der Zuiderzee; monographie van een Brakwatergebied. [Flora and fauna of the Zuiderzee; a monograph of brackish-water forms. (Halophytes, algae and phytoplankton by A. C. J. van Goor.)] viii + 460 p. C. de Boer: Helder, 1922.

6707. ROSSI, P. Nuovo contributo alla Flora del "Gruppo delle Grigne" (Prealpi Orobie). [New contribution to the Flora of the Grigne Group.] Nuovo Gior. Bot. Italiano n.s. 32: 396-441. 1925.—This is the first installment of a study on the flora of the Grigne Mountains in the province of Como, Italy (200-2410 m. above sea level). It is a list of 25 species of liverworts, 214 species of mosses, 4 sphagna, and 1 *Andreaea*, 5 species, 20 varieties, 3 forms and 5 subforms of *Filicinae*, 4 *Equisetaceae* and 1 *Lycopodium*, collected in the territory, with notes.—P. D. Caldis.

6708. SPRENGER, CARL. Über allerlei Sträucher Griechenlands. [Shrubs of Greece.] Mitteil. Deutsch. Dendrol. Ges. 35: 116-124. 1925.—The writer discusses the geographical distribution of 7 species of *Daphne* and of *Myrtus* in Greece.—J. C. Th. Uphof.

6709. STOYANOFF, N. Floristic notes on the Bulgarian North-East Macedonia. (Bul-

garian with German summary.) Ann. Univ. Sofia, Facult. Agron. 20: 107-144. 1924.—This land lies on the boundary between the Mediterranean and the Middle-European zones of vegetation. Formations of evergreen xerophilous shrubs (*Quercus coccifera*, *Phyllirea media*) appear only in few localities, sheltered from the north. The calcareous soil is especially rich in Mediterranean elements and also in old relic plants. A vegetation especially rich in Tertiary relics occurs on the limestone mountain Ali-Botush (*Convolvulus nitidus*, *Viola delphinantha*, *Potentilla apennina*, *Minuartia montana*, etc.).—D. Atanasoff.

6710. STOYANOFF, N. Origin of the xerothermic plant element in Bulgaria. (Bulgarian with an English summary.) Ann. Univ. Sofia, Facult. Agric. 21: 217-248. 1925.—The steppe character of the vegetation in many parts of Bulgaria is chiefly due to the destruction of forests by man. There are, however, also the remains of a primeval xerothermic vegetation, which is probably a relict from the steppe period. The author states that the steppe vegetation of Europe has originated less in Western Siberia (as is commonly supposed) than in the Mediterranean region of Europe and the Orient. An analysis of steppe flora common to Bulgaria and South Russia shows that most species are of Mediterranean origin.—D. Atanasoff.

6711. TAYLOR, NORMAN. Grier's notes on the flora of Long Island. Rhodora 27: 213-215. 1925.—Lists of plants published in Torrey and in American Midland Naturalist during the past 2 years are said to be unreliable and incomplete.—Geo. D. Fuller.

6712. WALLACE, G. B. The flora of Salisbury Crags. Trans. Proc. Bot. Soc. Edinburgh 29: 119-126. 1925.

6713. ZACHAU, ANDERS R. Några bohusländska växtlokaler. [Plant localities in Bohuslän (province in Sweden).] Svensk Bot. Tidskr. 19: 520-521. 1925.

FOREST BOTANY AND FORESTRY

W. N. SPARHAWK, *Editor*

(See also in this issue Entries 5914, 6067, 6081, 6111, 6149, 6159, 6179, 6217, 6320, 6321, 6489, 6514, 6523, 6529, 6530, 6533, 6547, 6552, 6571, 6588, 6610, 6642, 6653, 6656, 6665, 6684, 6686, 7271, 7655, 7913, 8689, 8729, 8734, 8735, 8743, 8866, 8867, 8893, 8905, 8908, 9084, 9181, 9186, 9284, 9374, 9405, 9734, 9901)

6714. ANONYMOUS. Alisiers et buls. [Sorbus and Buxus (Schaefferia?) in Belgium.] Bull. Soc. Cent. Forest. Belgique. 32: 81-95. 1925.—Results of an official investigation of the distribution of these two genera in Belgium are given largely in tabular form, under the headings: Forest region, Township, Geology and soil, Altitude and exposure, Forest type, Character of specimens, General observations.—H. T. Gisborne.

6715. ANONYMOUS. A new national pinetum: II. Kew Bull. 1925: 293-295. 1925.—A general account of the forest planting at Bedgebury, Kent, England, where, during 1925, 315 species and varieties were planted.—T. J. Fitzpatrick.

6716. ANONYMOUS. Annual report on the forest administration of Nigeria for the year 1923. 18 p. Government Printer: Lagos, 1924.

6717. ANONYMOUS. Balsa wood from British Honduras. Bull. Imp. Inst. 23: 4-8. 1925.—Balsa is the West Indian cork-wood, *Ochroma lagopus*, a tree 30-70 feet high and with a diameter of 1-2 feet. Its wood is so light that it is used in making rafts, floats for fishing nets, life belts and other articles for which a light wood is desired. Analysis revealed the outer wood to be about 3 times as heavy as that near the pith.—L. A. Kenoyer.

6718. ANONYMOUS. Deterioration of structures in seawater. Dept. Sci. & Ind. Res., Rept. Com. Inst. Civil Engineers 4. 73 p. H. M. Stationary Office: London, 1924.

6719. ANONYMOUS. Forest products of Tanganyika. Empire Production and Export 103: 55-58. 1925.

6720. ANONYMOUS. Incendies en 1923. [Forest fires during 1923.] Bull. Soc. Centrale Forest. Belgique 31: 456-457. 1924.—The year 1923 was one of the most favorable in Belgium in so far as forest fires were concerned. Thirty-nine fires burned a total area of 295 acres, with a damage of only 50,000 francs. Of the true forest types burned over, about 78% was high forest of resinous species.—H. T. Gisborne.

6721. ANONYMOUS. *L'attività del R. Istituto Superiore Forestale Nazionale dalla sua fondazione al 1924.* [Work of the National Forestry Institute from its establishment to 1924.] 47 p. M. Ricci: Firenze, 1924.—The forest situation in Italy is briefly outlined. The Forestry Institute was organized in 1914, and a forest experiment Station was added in 1922. Its work in the field of forest economics, forest legislation, silviculture, wood technology, forest measurements, hydrography, soil science, forest botany, forest pathology and physiology, and forest chemistry is described, and a list of publications is given. Up to the end of 1924, 9 volumes of "Annals," embracing about 3,000 pages, had been published.—Forestry training is given in a 2-year specialized course, following the completion of the course in agriculture. Up to 1924 there were 70 graduates, of whom 46 were employed by the State Forest Service.—*W. N. Sparhawk.*

6722. ANONYMOUS. Monkey apple timber from Sierra Leone. Bull. Imp. Inst. 23: 8-12. 1925.—*Anisophyllea laurina* is abundant about 70 miles from Freetown. It is a beautiful, decorative wood, but because of its density and brittleness its commercial possibilities are not promising.—*L. A. Kenoyer.*

6723. ANONYMOUS. Neuordnung des forstlichen Versuchswesens in Bayern. [Reorganization of forest research in Bavaria.] Centralbl. Gesam. Forstw. 50: 94-95. 1924.

6724. ANONYMOUS. Observations en matière forestière en 1923. [Observations on the year 1923 as it affected forests and forestry.] Bull. Soc. Centrale Forest. Belgique 31: 452-455. 1924.—The year was favorable to forestry in Belgium: growth was good due to weather conditions; seed crops were only mediocre; winter snows were favorable; fungi were only normally active; insects were dangerous only in a few sections; plantations were generally successful.—*H. T. Gisborne.*

6725. ANONYMOUS. *Ochna pulchra* fruits from Rhodesia. Bull. Imp. Inst. 23: 1-4. 1925.—This tree, 15-20 feet high, produces a berry-like fruit of high oil content. Analysis reveals an oil that might be used in soap-making and a residual meal which would have some feeding value if tests show that it is not poisonous.—*L. A. Kenoyer.*

6726. ANONYMOUS. Pan American cooperation in forest conservation. Pan American Union Forest. Circ. 12. 1-9. 1925.

6727. ANONYMOUS. Preliminary reports on the forest requirements of the Eastern and Central Provinces, Gold Coast Colony. (Sessional Paper X, 1924-1925.) 26 p. Government Press: Accra, 1924.

6728. ANONYMOUS. Proceedings of the Sixteenth Pacific Logging Congress. Timberman 27: 49-136. 1925.—Several long papers, brief reports, and discussion of the history of logging, logging methods and equipment, forest fire legislation, fire pumps, spark arresters and outside exhausts, slash disposal, the handling of cut-over lands, etc., are given.—*Duncan Dunning.*

6729. ANONYMOUS. Report of the Botanical and Forestry Department for 1924. 17 p. Govt. Printer: Hong Kong, 1925.

6730. ANONYMOUS. Report of the Indian Tariff Board regarding the grant of protection to the paper and paper pulp industries. 120 p. Govt. Cent. Publn. Branch: Calcutta, 1925.—The use and character of paper from Sabai grass and bamboo are described.—*E. N. Munns.*

6731. ANONYMOUS. Some British Honduras woods as paper-making materials. Bull. Imp. Inst. 23: 12-17. 1925.—*Hibiscus* sp. (white moho), *Schizolobium* sp. (quam wood), and *Ochroma lagopus* (polak) were tested and found to give satisfactory yields of good paper pulp.—*L. A. Kenoyer.*

6732. ANONYMOUS. Statens skogsförsöksanstalt. [The Swedish institute of experimental forestry.] (In Swedish and English.) 52 p., 42 fig. Gothenburg, 1923.

6733. ANONYMOUS. Tanning materials from Travancore. Bull. Imp. Inst. 23: 158-168. 1925.—Analyses were made of bark samples of *Mimusops elengi*, *Careya arborea*, *Buchanania latifolia*, *Albizia Lebbek*, *Acacia pennata*, *Hopea parviflora*, *Pterocarpus Marsupium*, and *Terminalia tomentosa*. None contained tannin enough of satisfactory grade to be worth exporting, but *Hopea parviflora* and *Careya arborea* would probably furnish satisfactory tannin extracts.—*L. A. Kenoyer.*

6734. ANONYMOUS. Terpentin in Niederländisch-Indien. [Turpentine in Dutch India.]

Tropenpflanzer 27: 66. 1924.—Forests of *Pinus Merkusii* in Atjeh, northern Sumatra, yield an excellent turpentine.—*J. C. Th. Uphof*.

6735. ANONYMOUS. The production of alcohol for motor fuel from the nipa palm in North Borneo. Bull. Imp. Inst. 23: 175–181. 1925.—In North Borneo there are 300,000 acres of Nipa palm (*Nipa fruticans*). A single fruit stalk when properly tapped yields 6–7 gallons of sap from which about 7% of alcohol can be recovered.—*L. A. Kenoyer*.

6736. ANONYMOUS. Zusammenstellung der im Jahre 1924 in den preuss. Staatsforsten vorgekommenen Waldbrände. [Forest fires in the Prussian state forests in 1924.] Zeitschr. Forst.- u. Jagdw. 57: 184–185. 1925.—A total of 346.6 acres was burned, on 53% of which the stand was wholly or partly destroyed. July was the worst fire month.—*J. Roesser, Jr.*

6737. AHLBORN, ROBERT. Baumriesen Südhannovers. [Tree giants of southern Hanover.] Mitteil. Deutsch. Dendrol. Ges. 35: 230–241. 2 pl. 1925.—Several large specimens of *Fagus sylvatica*, *Tilia*, *Salix*, and *Taxus baccata* are mentioned.—*J. C. Th. Uphof*.

6738. ALBERT, P. La traite de la gomme en Mauritanie. [Character of the resin from Mauritania.] Bull. Agric. Gén. des Colonies 18: 505–508. 1925.

6739. ALBISETTI, C. La selvicoltura attraverso i secoli con speciali riflessioni sul Canton Ticino. [Silviculture through the centuries, with special reference to the Canton Ticino.] 101 p., 38 fig. Grassi & Co.: Bellinzona, 1925.—This is a sketch of the development of silviculture from the earliest times, and an account of the engineering and silvicultural work for control of avalanches and torrents in the Canton Ticino, Switzerland.—*W. N. Sparhawk*.

6740. ALVIELLA, FELIX GOBLET D'. Notes sur l'histoire des forêts belges. [Notes on the history of Belgian Forests.] Bull. Soc. Centrale Forest. Belgique 31: 181–201, 245–265. 1924.—The extent of the forest areas in Belgium previous to the 12th century is traced, and the influences of the forest on the linguistic, political, and religious tendencies of that time are pointed out. The Romans distinguished between high forest and coppice; and between natural reproduction from seed, from sprouts, and from cuttings. They recognized the effect of size of tree on utilization; they had certain planting practices, and Caesar classified the forests as a public utility. Beginning with the 8th century there was a cessation of agriculture due to war, and the forests gained in area. This period was followed by extension of agriculture, draining of marsh lands, and cutting of the forest. The first law prohibiting the setting of fire in the forest was dated about 832. It was not until after the 11th century, however, that truly beneficial forest laws of extensive application became effective.—*H. T. Gisborne*.

6741. ALVIELLA, FELIX GOBLET D'. Notes sur l'histoire des forêts belges. [Notes on the history of Belgian forests.] Bull. Soc. Centrale Forest. Belgique 31: 359–377, 419–441. 1924.—In these issues the development of state, town, public, and private forest ownerships in Belgium are described. Documentary evidence is cited in detail to establish facts for the epoch preceding and following the reign of Charlemagne, and from that era to the 13th century.—*H. T. Gisborne*.

6742. ALVIELLA, F. G. D'. Notes sur l'histoire des forêts belges. [History of Belgian forests.] Bull. Soc. Centrale Forest. Belgique 32: 65–80, 129–153. 1925.—The political and economic history of forest policy and of individual Belgian forests, is given through the 12th and 13th centuries. (To be continued.)—*H. T. Gisborne*.

6743. (ARTSYBASHEV, D. D.) Арцыбашев, Д. Д. Отчет по работам Тульской Аклиматизационной Станции за 1923–24 г. [Report of the work at the Tula Acclimatisation Station.] (English summary.) Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. & Plant-breed.] 14: 31–192. 1924–1925 [1925].—Tula Acclimatisation Station, founded in 1898, is situated in the central blackearth region at 52.5 north latitude. The director of the station favors the propagation of trees by seed because of the possibility of selection, which is of great importance in acclimatisation. Detailed descriptions of the genera *Abies*, *Pinus*, *Picea*, *Acer*, *Juglans*, *Carya*, and *Fraxinus* are given together with a description of the station's collections.—*M. Demerec*.

6744. BAILEY, I. W. Notes on the "spruce budworm" biocoenose II. Structural abnormalities in *Abies balsamea*. Bot. Gaz. 80: 300–310. 3 pl., 3 fig. 1925.—In transverse sections of the stems of balsam firs attacked by the spruce budworm, there frequently are

2-3 narrow, dark reddish brown zones of discolored tissue. These discolorations are due to the presence of parenchymatous elements containing an amber colored substance. They are confined to the upper extensions of growth layers formed subsequent to the advent of the budworm, and are induced by injuries to the terminal shoots. The abnormalities not infrequently are serious obstacles in studying the chronology of the successively formed growth layers of the cauline axis. Two methods of overcoming such difficulties in stem analyses are briefly outlined. The weakened and dying trees defoliated by the budworm are attacked by various insects and fungi. One of the commonest of these secondary parasites is *Pissodes dubius*. It is shown that the areas of traumatic tissue induced by the feeding of this weevil are of considerable significance in stem analyses.—*Author*.

6745. BAKER, FREDERICK S. Character of the soil in relation to the reproduction of western yellow pine [*Pinus ponderosa*]. Jour. Forest. 23: 630-634. 1925.

6746. BAKER, F. S. Comments on investigations of tapers as a factor in the measurement of standing timber. Jour. Forest. 22: 38-43. 1924.

6747. BALDWIN, HENRY I. Forest colonization in Sweden. Jour. Forest. 22: 241-257. 1924.

6748. BALDWIN, HENRY I. The graphical representation of forest form. Jour. Forest. 23: 985-990. 3 fig. 1925.

6749. BALSAC, R. HEIMDE, J. MAHEU, M. CERCELET, AND G. S. DAGAND. Valeur papetière du bois d' "Avodire" de la Côte d'Ivoire. [Value of wood of *Turraenthus africana* from the Ivory Coast for paper making.] Bull. Agric. Gén. des Colonies 18: 520-531. 1925.

6750. BARBER, C. A. Parasitic trees of South India. Empire Forest. Jour. 3: 213-222. 2 pl. 1924.

6751. BERRERA, RAMON DE LA. Plan de trabajos y organizacion del personal forestal. [Plan of work and organization of the forest personnel.] Mexico Dept. Bosques Circ. 1. 1-12. 1923.

6752. BATES, CARLOS G. A key to the identification of some coniferous seedlings. Jour. Forest. 23: 278-281. 11 fig. 1925.

6753. BATES, CARLOS G. The erosion problem. Jour. Forest. 22: 498-505. 1924.

6754. BATES, C. G. The relative light requirements of some coniferous seedlings. Jour. Forest. 23: 869-879. 2 fig. 1925.

6755. BATES, C. G., AND OTHERS. Report of committee on growth of uneven-aged stands. Jour. Forest. 22: 532-533. 1924.

6756. BAUER, HANS A. Studying tree growth with an increment borer. Jour. Forest. 22: 298-301. 1924.

6757. BEHRE, C. EDWARD. Computation of total cubic contents of trees. Jour. Forest. 22: 62-63 [643-644]. 1924.

6758. BEHRE, C. EDWARD. Is taper based on form quotient independent of species and size? Jour. Forest. 22: 282-290. 3 fig. 1924.

6759. BEHRE, C. EDWARD. Notes on the cause of eccentric growth in trees. Jour. Forest. 23: 504-507. 3 fig. 1925.

6760. BELYEA, HAROLD C. A study of comparative height growth of six planted species. Jour. Forest. 22: 389-391. 1924.—The species *Pinus strobus*, *P. resinosa*, *P. silvestris*, *P. ponderosa*, *Picea excelsa*, *Larix sibirica*, in Oswego County, New York, are discussed.—W. N. Sparhawk.

6761. BELYEA, H. C. A study of mortality and recovery after logging [New York]. Jour. Forest. 22: 768-779. 1 fig. 1924.

6762. BELYEA, HAROLD C. Some ratios of form in Adirondack swamp spruce. Jour. Forest. 23: 43-48 [626-631]. 1925.

6763. BELYEA, HAROLD C., AND T. S. WOOLSEY, JR. A forest policy for New York State. Jour. Forest. 23: 10-19. 1925.

6764. BERTIN, A. Notes sur les bois de l'Indochine. [Woods of Indochina.] Gouvernement Général de l'Indochine, Agence Economique Pub. 9. 1-63. Paris, 1924.—The species of commercial importance, especially in northern Annam, are described, with notes on their utilization.—W. N. Sparhawk.

6765. BESLEY, F. W. The fuel wood situation and how it affects the practice of silviculture. *Jour. Forest.* 21: 231-235. 1923.—Economic conditions on the farms in the eastern and southern U. S. A. indicate an increasingly large use of wood for fuel. This use offers excellent opportunity for intensive silviculture.—*Philip C. Wakeley.*

6766. BIENFAIT, J. L., AND J. PH. PFEIFFER. A scheme for systematic identification of woods with the aid of a hand lens. *Jour. Forest.* 22: 724-761. 1924.

6767. BJÅNES, O. T. A short review of agriculture and forestry in Norway. 64 p., 12 pl. Dept. of Agric.: Oslo, 1921.—The forest research work and the theory of management of forest lands are briefly described.—*E. N. Munns.*

6768. BLANFORD, H. R. Forest management and preparation of working plans in Burma. *Empire Forest. Jour.* 4: 54-65. 1925.—The Burma plans contemplate a continuous sustained yield of teak.—*E. N. Munns.*

6769. BOAS, J. E. V. Dansk forstzoologi. [Danish forest zoology.] 2nd ed., xxii + 761 p., 638 fig., 32 pl. Gyldendalske Boghandel: København, 1923.—The book deals with the relation of the animal kingdom to forestry and forest products. It covers mammals (126 p.), birds (160 p.), insects (514 p.), and miscellaneous lower animals (37 p.).—*W. N. Sparhawk.*

6770. BOSS. Welchen Einfluss hat die Höhe der Kulturkosten auf die Waldverzinsung. [What is the influence of cultural expenses on forest interest?] *Zeitschr. Forst.- u. Jagdw.* 56: 616-622. 1924.—This is a discussion of the problem of interest rate on forest capital, with examples to illustrate the influence of cultural expenses on the rate, and a comparison involving interest rates in relation to the forest interest theory and the soil rental theory. It is pointed out that it is more important from a financial viewpoint to strive for natural regeneration, than to cut down the rotation by employment of artificial regeneration methods. Any rotation which brings about an improvement in the soil condition or prevents deterioration when such conditions are ideal is the correct one.—*J. Roesser, Jr.*

6771. BRASNETT, N. V. Fires in the pencil cedar forests of Kenya Colony. *Empire Forest Jour.* 3: 74-77. 1924.—Occasionally a severe fire is responsible for good reproduction of *Juniperus procera*, but this happens only when the fire is followed by heavy seeding and abundant rainfall the following year.—*E. N. Munns.*

6772. BREWSTER, D. R., AND J. A. LARSEN. Studies in western yellow pine nursery practice. *Jour. Agric. Res.* 31: 1101-1120. 5 fig. 1925.—This report covers the results of investigations conducted at Priest River Forest Experiment Station in northern Idaho. The following conclusions were reached: When clean, sharp sand is used and plenty of water is available, yellow pine seed in spring-sown beds should be sown broadcast and covered to a depth of from $\frac{1}{4}$ to $\frac{3}{8}$ inch. Shade should not be used at any time. The beds should be watered rather heavily and often enough to maintain an average soil-water content of more than 50% of dry weight. Where water is scarce good results may be obtained on moderately heavy moisture-retentive soil by sowing in drills and cultivating between the rows, watering only at times of special need.—*J. A. Larsen.*

6773. BROCKWAY, G. E. The silvicultural treatment of the more important timber-producing eucalypts. *Empire Forestry* 1: 52-65, 229-246. 1922.—The methods of seed collection, nursery and planting practice are given, together with methods of management for young and old stands. Contrary to usual belief, the eucalypts are not particularly rapid growers on the dry sites where they usually occur.—*E. N. Munns.*

6774. BROUSE, E. F. How fire changes forest types [Pennsylvania]. *Jour. Forest.* 22: 43-51 [624-632]. 1924.

6775. BRUCE, DONALD. A new technique for growth studies by stem analyses. *Jour. Forest.* 22: 58-61 [639-642]. 1 fig. 1924.

6776. BRUCE, DONALD. Forest mensuration to-day. With comment by C. EDWARD BEHRE. *Jour. Forest.* 23: 282-289. 1925.

6777. BRUCE, DONALD. Light burning. Report of the California Forestry Committee. *Jour. Forest.* 21: 129-133. 1923.—After 3 years the Committee was unable to find or devise a fire protective system, based on the light-burning theory, more practicable and economical than that used on the National Forests.—*Philip C. Wakeley.*

6778. BRUCE, DONALD, AND FRANCIS X. SCHUMACHER. Revised volume tables for second-growth redwood [*Sequoia sempervirens*]. *Jour. Forest.* 23: 148-155. 1925.

6779. BURGER, HANS. Einfluss von Rasse, Boden, und Erziehung auf die Stammform der Föhre. [Influence of race, soil and care on the stem form of pine.] Zeitschr. Forst.- u. Jagdw. 57: 296-303. 1925.—Poor pine stands are often the result of improper care of soil and stands, and in central Europe pine has been as much sinned against by lack of attention as by use of seed of indefinite origin. Engler's 1908 and 1909 source of seed tests in Eglisau are discussed, also the growth of pine in its native habitat in various central European localities. The value of proper thinning, underplanting and mixing with other species to cause pine to overcome its tendency to spread out, is emphasized.—*J. Roeser, Jr.*

6780. BUSSE. Zur Saatgutsortierung. [Grading of forest tree seed.] Zeitschr. Forst.- u. Jagdw. 56: 515-521. 1924.—A comparison of 2 independent germination tests involved *P. sylvestris* seed, the seed being separated by weights into 3 lots. While the results do not strictly check, the author is convinced that the grading of forest tree seed, preferably by centrifuging, sorting first by weight and then according to size, is as necessary as the grading of field crop seed.—*J. Roeser, Jr.*

6781. BUSSE. Zur Saatgutsortierung. [Grading forest tree seed.] Zeitschr. Forst.- u. Jagdw. 57: 231-236. 1925.—Since a small seed is not necessarily a light one, grading forest tree seed first by weight and then by size would overcome the probability that desirable strains like the small-crowned Scotch pine which often produce small seeds, would be eliminated.—*J. Roeser, Jr.*

6782. BYSHE, F. H. Origin and development of the forestry branch, Department of the Interior, Canada. Empire Forest. Jour. 4: 76-81. 1925.

6783. C. La forêt et les inondations. [Forests and floods.] Bull. Soc. Centrale Forest. Belgique 31: 442-446. 1924.—The floods in the valley of the Seine in 1924 are used to advance the usual arguments for forests as a beneficial influence on stream flow. The 30-year-old experiment at the Zurich forest experiment station is cited. The work in the French Alps is perhaps the best example of control of floods by forestation. Small rock dams in the steeper streams are recommended as a further possible aid in flood control. Intensive study of the problem is advocated.—*H. T. Gisborne.*

6784. CALKINS, HUGH G. In defense of brush. Jour. Forest. 23: 30-33. 1925.

6785. CAMPS, CARLOS DE. Arundo donax L. España Forest. 7: 142-144. 1921.—This cane, growing along the margins of streams and in wet places in southern Spain, reproduces vigorously from sprouts and root suckers and forms an excellent binder for loose soil. The canes, cut when 2 years old, have considerable commercial value.—*W. N. Sparhawk.*

6786. CANDIANI, L. Sul regime dei boschi e delle acque agli effetti della navigazione interna del Veneto. [Effect of the forest upon water and its effect upon the Venetian canals.] Atti del IV° Congresso Forestale Italiano 1921: 86-100. Udine, Italy, 1923.

6787. CARO, ELADIO. El eucalypto. Sus aplicaciones industriales y su porvenir en la utilizacion de nuestros baldios. [Eucalyptus: its industrial use and its future in the utilization of our idle land.] España Forest. 6: 21-27. 1 pl. 1920.—After discussing the utilization of the wood and the extraction of eucalyptol from various species, the author gives some of the results of tests of a large number of species, made at El Robledal forest near Malaga. Several other extensive plantations, mostly in southern Spain, are mentioned. The following species endure low temperatures and even light frosts: *globulus*, *cambagei*, *cinerea*, *gunnii*, *rubida*, *smithii*, *rostrata*, *amygdalina*, *delegatensis*, *maideni*, *consideneana*, *macarthuri*, and *viminialis*. The following do well in poor soils: *rostrata*, *consideneana*, *delegatensis*, *leucoxydon*, *maideni*, *mulleri*, *smithii*, and *occidentalis*. In dry soils, *citriodora*, *corynocalyx*, *delegatensis*, *maculata*, *melliodora*, *mulleri*, and *occidentalis* may be planted. Others are listed which require rich, deep soil, or moist sites, and those which cannot endure low temperatures.—*W. N. Sparhawk.*

6788. CARULLO, F., E L. SENNI. Per la conoscenza forestale della Sicilia. [Forest conditions in Sicily.] Ann. R. Staz. Sper. Agrumic. e Fruttic. Acireale. 7: 58-60. 1923.—The forest conditions are described and the problems involved are briefly stated.—*P. D. Caldis.*

6789. CHAFFEE, REGINALD R. Comparison of the volumes of virgin white pine [*Pinus strobus*] stands in Pennsylvania. Jour. Forest. 22: 190-192. 1924.

6790. CHAMPLY, RENE. Le travail du bois par les procédés modernes. Tome premier:

Les bois d'oeuvre. [Modern processes of wood utilization. Vol. I. Timber.] 276 p., 157 fig. Desforges, Girardot & Cie: Paris, 1925.

6791. CHAPMAN, H. H. Corporate versus public ownership of land for forest production as applied to the state of Connecticut. Jour. Forest. 22: 22-30 [603-611]. 1924.

6792. CHIPP, T. F. The Gold Coast forestry problem. Empire Forest. Jour. 2: 65-75. Map. 1923.—Due to fires, savannahs are encroaching on the forest. Heaviest losses are in the evergreen belt, but when this goes the deciduous forest will also be seriously diminished. Education for better fire protection is necessary.—E. N. Munns.

6793. CHITTENDEN, A. K. Forest planting in Michigan. Michigan Agric. Exp. Sta. Spec. Bull. 103. 1-16. 4 fig. 1921.—This is a discussion of the trees that are profitable to plant in Michigan for forest purposes. The rate of growth is given, based on plantations of known history. Of 34 hardwood trees in a 32-year old mixed planting near Grayling in Roscommon County, none are growing satisfactorily, while of 9 species of conifers, only red pine, white pine and Norway spruce have made satisfactory growth.—Ernst A. Bessey.

6794. CHITTENDEN, A. K. Growth of roadside trees. Mich. Agric. Exp. Sta. Quart. Bull. 6: 119-121. 1924.—Notes are given on rapidity of growth and size attained by different species of trees planted by the roadside. Carolina poplar grows most rapidly. The most rapidly growing tree of desirable quality is the American elm (*Ulmus americana*).—Ernst A. Bessey.

6795. CHITTENDEN, A. K. The station's white pine plantation. Mich. Agric. Exp. Sta. Quart. Bull. 4: 105-106. 1922.—In 1896 about $3\frac{1}{2}$ acres were planted to 5-year old white pine (*Pinus strobus*) seedlings, in rows 8×12 feet. The crown cover is now fairly complete. No thinning has been done. The trees average 45 feet in height and 8 inches in diameter. Their annual volume increment amounts to 1276 board feet per acre per year.—Ernst A. Bessey.

6796. CIESLAR, (ADOLF.) Kalkesche und Wasseresche. ["Lime ash" and "water ash."] Centralbl. Gesam. Forstw. 51: 200-204. 1925.—The wide differences in growth of seedlings from ash (*Fraxinus excelsior*) grown on moist lowlands and from that grown on limestone hills indicate the importance of careful selection of seed for forest planting.—W. N. Sparhawk.

6797. CIESLAR, ADOLF. [Rev. of: WEEDER, ALOIS. Betrachtungen aus dem praktischen Forstwesen. (Experiences in practical forestry.) 64 p. Pub. by author: Vöcklabruck (Austria), 1923.] Centralbl. Gesam. Forstw. 50: 82-83. 1924.

6798. CIESLAR, (ADOLF.) [Rev. of: WIEDEMANN, EILHARD. Fichtenwachstum und Humuszustand. (Growth of spruce and condition of the humus.) Arbeiten Biol. Reichsanstalt Land u. Forstw. 13^e: 1-77. 1925.] Centralbl. Gesam. Forstw. 51: 121-126. 1925.

6799. CIVITA, D. I rimboschimenti con specie di rapido accrescimento. [Reforestation with the most rapid growing species.] Atti del IV° Congresso Forestale Italiano 1921: 171-188. Udine, Italy, 1923.

6800. CLARINVAL, AM. La noctuelle du pin. Noctua piniperda. [Trachea piniperda.] Bull. Soc. Centrale Forest. Belgique 32: 153-166. 3 pl., 2 fig. 1925.—The history of this dangerous insect in Belgium is given from 1840 to date, followed by excellent sections on classification, nomenclature, description, dispersion, biology, damage, enemies, preventive and suppressive measures, and conclusions.—H. T. Gisborne.

6801. CLARINVAL, AM. Le genre Adelges et la question du meleze d'Europe. [The genus Adelges in relation to European larch.] Bull. Soc. Centrale Forest. Belgique 31: 507-521. 1 fig. 1924.—The effects of 2 aphids, *Adelges abietis* and *A. strobilobius*, are described, with detailed drawings of *A. abietis*. The importance of both species to foresters is pointed out, and the methods of control and the natural enemies are described.—H. T. Gisborne.

6802. CLARINVAL, AM. Le genre Scolytus et la question de l'orme. [The attack on elms by Coleopterus. Bull. Soc. Centrale Forest. Belgique 32: 24-35. 1925.—The recent dying of excessive numbers of elm trees in Belgium is attributed, by this author, to other causes, as well as to insects. The life history of *Coleopterus*, which is the most dangerous insect, is given, together with recommendations for controlling this beetle.—H. T. Gisborne.

6803. CLEGHORNE, W. S. H. A study in charcoal, being a research on charcoals made from exotic woods grown in the Union of South Africa. Trans. Roy. Soc. South Africa 11:

23-43. 5 fig. 1923.—*Eucalyptus resinifera*, *E. viminalis*, *E. saligna*, *E. sideroxylon*, *E. tereticornis*, *E. maidenii*, *Pinus insignis*, *P. pinaster*, *P. taeda*, *Cupressus lusitanica*, *Acacia decurrens*, *A. saligna*, and *A. cyclops* were studied.—*E. N. Munns*.

6804. CLINE, A. C. The group selection method with white pine [*Pinus strobus*]. Jour. Forest. 22: 128-134. 1924.

6805. CLUBB, R. W. Various timbers, British and foreign, used in the manufacture of casks. Jour. Inst. Brewing N.S. 22: 65-68. 1925.

6806. COLLINGWOOD, G. H. Extension work in farm forestry in New York State. Jour. Forest. 21: 254-259. 1923.—This describes the methods used or contemplated in helping New York State farmers to build up groups of woodlots with sustained yields sufficient to support local wood-using industries.—*Philip C. Wakeley*.

6807. COMMISSION ON NATURAL AND INDUSTRIAL RESOURCES OF NORTHERN IRELAND. Report on afforestation in Northern Ireland. 16 p. H. M. Stationery Office: Belfast, 1925.—Because North Ireland has only 1.2%, or 40,000 acres, in forest, it is recommended that non-productive State forest lands be planted at the rate of about 300 acres annually, that grants be given to owners of land who plant 100 acres or more annually, and that planting stock be furnished small owners at cost.—*E. N. Munns*.

6808. COMMITTEE REPORT. Beschluss des Reichsforstwirtschaftsrates betreffend Beschaffung einwandfreien Saatgutes für die deutsche Forstwirtschaft auf Grund der Beratung des Sonderausschusses in Eberswalde am 6 Mai 1924 und anschliessender Erörterungen. [Results of proceedings of the National Forest Council relating to the production and procuring of desirable forest tree seed for German forest management based upon the deliberations of the separate committee at Eberswald on May 6, 1924.] Zeitschr. Forst- u. Jagdw. 56: 637-642. 1924.—An outline depicting a workable method for procuring desirable tree seed through forest owners and the establishment of a recognized code relating to forest tree seed. The outline is in 4 parts: General principles; statutes governing forest tree seed legitimation and approval; systematic arrangement of organization to procure this recognition; and definition of racial site zones, zones of recognition in the case of exotic species, zones of authority, etc.—*J. Roeser, Jr.*

6809. CONZATTI, CASIANO. Monographia del Arbol de Santa Maria del Tule. [A monograph of the tree of Santa Maria del Tule.] 65 p., 3 pl., 18 fig. Sec. Educ. Publica. Tulleres Graficos de la Nacion: Mexico, 1921.—An account of a large tree, *Taxodium mucronatum*, estimated to be over 2000 years old.—*E. N. Munns*.

6810. COOPER, WILLIAM S. The forests of Glacier Bay [Alaska]—present, past and yet unborn. Jour. Forest. 22: 16-23 [598-605]. Map. 1924.

6811. COPE, J. A. A progress report on the reseedling of cutover lands to loblolly pine [*Pinus taeda*]. Jour. Forest. 22: 171-174. 1924.

6812. COPE, J. A. Grazing in pine plantations. Jour. Forest. 23: 297-299. 1925.

6813. COPE, J. A. The angle mirror in forest mensuration. Jour. Forest. 21: 199-200. 1 fig. 1923.—The author describes and defends the use of the angle mirror in laying off small rectangular plots.—*Philip C. Wakeley*.

6814. COPLISTON, W. E. The Bombay forests. 57 p., 28 fig. Govt. Print. Office: Bombay, 1925.—A general account of the wealth of the forest resource, indicating the necessity for treating the forest as a crop and giving it necessary protection that yields may be continuous.—*E. N. Munns*.

6815. CRAHAY, N. I. Nos Forêts Domaniales. [Our State Forests.] Bull. Soc. Centrale Forest. Belgique 32: 3-23. 1925.—The author outlines the political and economic history of the Belgian forest lands and the forestry movement, from the year 1800 to date. He concludes with an urgent plea for the extension of the State lands and a better paid and more competent forest personnel.—*H. T. Gisborne*.

6816. CRAIG, ROLAND D. Softwood resources of Canada. Empire Forest. Jour. 3: 198-206. 1922.

6817. CRAIGHEAD, F. C. A brief summary of the budworm investigations in Canada. Jour. Forest. 21: 134-138. 1923.—Since 1909, budworm epidemics have devastated spruce and balsam forests of Quebec, Ontario, New Brunswick, and Maine. The author gives estimates

of the loss in the damaged stands, manner of injury, effect on growth of surviving trees, variations in different forest types, contributing causes, and probable future developments of epidemics. Balsam suffers most and its presence increases damage to spruce; hardwoods in mixture lessen the severity of the attack. Control lies in development and maintenance of "stable" forest types.—*Philip C. Wakeley.*

6818. CRAIGHEAD, F. C. *The Dendroctonus problems.* Jour. Forest. 23: 340-354. 1925.

6819. CREVOST, CH. *Catalogue des produits de l'Indochine; résines et oléo-résins.* [Catalogue of products from Indo-China; resins and oleo-resins.] Bull. Econ. Indochine N.S. 28: 1-57. 1925.

6820. CROUCHLEY, K. W. E. *Mangroves.* Jour. Cambridge Univ. Forest. Assoc. 2³: 20-23. 1925.—The mangrove swamps of Borneo contain about 30 species of trees. Artificial regeneration is customary, the seed being pushed into the mud. Three serious pests are monkeys which eat unripe seed, rats which eat the seed as it falls, and crabs which eat the roots and primary leaves of the seedlings. Several methods of combatting the crab, which is the worst menace, have been tried. Mangroves seed prolifically and the woods establish themselves quickly. Disease and parasitic fungi are rare. Growing fuel wood on short rotations is the most profitable form of management. In Borneo the tannin or mangrove cutch is extracted from the bark, instead of exporting the dried bark as is done in East Africa.—*W. N. Sparhawk.*

6821. CUTANDA, V. *Los montes de Toledo.* [The forests of Toledo.] España Forest. 6: 1-3. 1 pl. 1920.—The former virgin forests of oaks (*Quercus tozza* and *Q. suber*) have been almost entirely destroyed. There are some oak coppice forests, cut over at short intervals for charcoal, but jara (*Cistus ladaniferus*) has taken possession of much of the ground.—*W. N. Sparhawk.*

6822. DABAT, L. *Station de recherches et d'expériences instituée à l'École Nationale des Eaux et Forêts.* [The experiment station at the National School of Forests and Waters.] Direct. Gén. Eaux et Forêts, Min. Agric. Circ. 878. 1-17. Paris, 1920.—The war made necessary a general reorganization of the experiment station at Nancy. Four sections have been established: (1) Forestry, including soils, meteorology, biology, silviculture and wood technology; (2) botanical, including morphology and physiology, life processes, phytogeography; (3) zoological, including insects, diseases, fish and game; (4) conservation and restoration, including the control of erosion and avalanches, flood control, and forest economics.—*E. N. Munn.*

6823. DAGUE, WILLIAM F. *Manual labor saving devices in nursery practice.* Jour. Forest. 22: 790-792. 1924.

6824. (DANILOV, E. A., AND V. M. BORTKEVICH.) Данилов, Е. А. и В. М. Борткевич. *К истории акклиматизации и натурализации древесных пород в России.* [A contribution to the history of acclimatisation and naturalisation of tree species in Russia.] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14⁴: 3-30. 1924-1925 [1925].—A short sketch is given of the history of acclimatisation of forest trees in European Russia and of the establishment of the first arboreta. A list of dendrological and botanical gardens in European Russia is included.—*M. Demerec.*

6825. DAVIE, W. A. *Afforestation of the White Nile mud flats.* Empire Forest. Jour. 3: 24-29. 2 pl. 1924.—Seed of sunt (*Acacia arabica*) are sown on the mud immediately following subsidence of the flood. Seedlings survive fairly well a 10-14 weeks' immersion.—*E. N. Munn.*

6826. DAWSON, W. *The relationship of the State to private forests in some European countries.* Jour. Cambridge Univ. Forest. Assoc. 2³: 17-20. 1925.—Although there was active legal restriction of forest destruction under the Normans and even under the Saxons, the nearest approach to public control of existing private woodlands in England now is the Act of Entail, which prevents an owner from destroying his woods without the consent of his heir. In northern Germany, where there has been no State control, the area of privately owned forest has diminished, while there has been a steady increase in Bavaria, where control is strict. In France, deforestation requires a permit, and is forbidden in protection forests. The afforestation of the Landes (1,600,000 acres) was done partly by the State and

by the communes, but mostly by private owners under compulsion but with financial assistance from the State. About 5,000,000 acres in the Karst (Jugo-Slavia) has been planted since 1880 under a similar system of compulsion and State aid.—In Austria, afforested land is relieved completely of the ordinary land taxes; in France certain classes of land are relieved of $\frac{2}{3}$ of the tax for 30 years; in Russia certain exemptions were made for 30 years after planting, and all protection woods were entirely free from taxation.—The bulk of the recent legislation, particularly in the newer States, has favored exploitation rather than conservation.—*W. N. Sparhawk.*

6827. DEAN, F. W. The reclamation of stripped coal lands [Ohio]. *Jour. Forest.* 23: 677-682. 1925.

6828. DEBIERRE, F. *Le chêne-liège en Tunisie.* [Cork oak in Tunisia.] 60 p. *Map.* Imprimerie Centrale: Tunis, 1922.—This includes descriptions of *Quercus suber*, of the oak forests, of the cork industry and uses of cork, and of the forest fire problem. There is also a brief account of the extraction of briar root (*Erica arborea*) for making pipes.—*W. N. Sparhawk.*

6829. DECOMBES, PAUL. *La forêt régulatrice et génératrice des eaux.* [The forest as regulator and generator of water.] *Rev. Eaux et Forêts* 59: 139-142. 1921.

6830. DENGLE, F. *Fichtenwachstum und Humuszustand.* [Growth of Norway spruce and condition of the humus.] *Zeitschr. Forst.- u. Jagdw.* 56: 751-762. 1924.—The results of recent Swedish and Danish investigations in nitrogen decomposition in the forest soil are applied to the spruce stands of Saxony to determine to what extent growth stoppage and interruptions in humus decomposition may be correlated. Wiedemann found that on exposed forest soil following clear-cutting, humus decomposition originally progresses favorably, but suddenly and completely stops. This condition is induced by dry years during which the fungous and bacterial organisms in the surface soil suffer heavy loss. The result is cessation of the nitrification process, while the superficial tree roots are damaged and growth is interrupted. In spruce stands, clear-cutting and neglect of humus culture are the chief agents causing unfavorable soil conditions. The best remedy is the use of the selection system and mixed stands; larch is preferred to others. However, the natural state of forest and soil may be kept in as healthy condition with clear-cutting as with any of the more natural methods by proper precautions during the critical regeneration period. In a biological sense, careful clear-cutting practice may be considered a form of "Dauerwald."—*J. Roesser, Jr.*

6831. DENGLE, ALFRED. *Über die Wirkung der Bedeckungstiefe auf das Auflaufen und die erste Entwicklung des Kiefernnsamens.* [Effect of depth of covering upon germination and early development of pine seed. *Zeitschr. Forst.- u. Jagdw.* 57: 385-408. 2 pl. 1925.—Germination percentage in pine decreases with increasing soil depth, the decrease being more rapid with depths of 2 cm. and greater. The period of germination is retarded and the percentage of seedling loss increases directly with depth of cover and with compact soil, being especially high when the former is over 2 cm. The depth of covering governs the type of germination. Subsequent development of individual trees shows a decreasing influence of depth of seed cover, and nourishment becomes more important. All factors considered, a depth of 1 cm. is recommended as best for pine seed in the nursery.—*J. Roesser, Jr.*

6832. DESCHAMPS, A. *Considerations sur la conservation des grosses graines.* [The storage of the larger tree seed.] *Bull. Soc. Centrale Forest. Belgique* 32: 96-101. 1925.—Results are given from experiments in storing the seed of 2 species of oak and 1 of chestnut.—*H. T. Gisborne.*

6833. DIMITZ, J. *Zur Lehre von den Durchforstungen und Lichtungen.* [Theory of thinnings and light cuttings.] *Centralbl. Gesam. Forstw.* 50: 97-105. 1924.

6834. DI TELLA, G. *La difesa silvo-pastorale dei bacini montani.* [Restriction of the woodland pasture in mountain drainages.] *Atti del IV° Congresso Forestale Italiano* 1921: 161-171. Udine, Italy, 1923.

6835. DOCK, HANS. *Die "terrestrische" und "Luftstereophotogrammetrie" und ihre Bedeutung für die Forstwirtschaft.* [Terrestrial and aerial stereophotography in forestry.] *Centralbl. Gesam. Forstw.* 51: 258-270. 1925.

6836. DROVS. *Zur Dauerwaldfrage.* [The "continuous" forest.] *Zeitschr. Forst.- u. Jagdw.* 57: 46-48. 1925.—After 50 years of experience it is believed that the forests in general,

in Prussia at least, have been improved under the clear-cutting form of management, and judgment of the "continuous" system should be withheld for a time in order to see if it can show comparable results.—*J. Roeser, Jr.*

6837. DRUMAUX, L. Bois mort et acidité du sol. [Effect of dead wood on soil acidity.] Bull. Soc. Centrale Forest. Belgique 32: 166-176. 1925.—A German experiment in correcting soil acidity by covering the land with dead branches is described, and the probable success emphasized. The author then points out the numerous chemical and biologic factors involved.—*H. T. Gisborne.*

6838. DUNNING, DUNCAN. An instrument for measuring increment cores. Jour. Forest. 23: 183-184. 1 fig. 1925.

6839. DURLAND, W. D. The status of forestry in Porto Rico. Jour. Forest. 23: 913-918. 1925.

6840. EBERBACH. Die kaufmännische Bilanz beim forstlichen Unternehmen. [The commercial balance in forestry enterprise.] Zeitschr. Forst- u. Jagdw. 57: 357-373. 1925.—The quarrel between soil and forest rental theorists has no foundation in fact. For each individual forest undertaking, public or private, a goal must be set in advance and the results of management can only be measured by keeping books. The items involved in forest management accounting and their application are described.—*J. Roeser, Jr.*

6841. ECKBO, N. B. Experiments in preservation of mining timbers, Ferreira deep mine, Johannesburg. Union South Africa Forest Dept. Bull. 16. 1-9. 1925.—Timbers treated with zinc sulphate are said to have double the service life of untreated timbers. At an estimated cost of 1½d. per cu. foot, the chemical treatment of mine timbers on a large scale is advocated.—*C. F. Korstian.*

6842. EDWARDES, S. M. A note on the durability of Indian teak. Empire Forestry 1: 257-260. 1922.—Various places are cited where teak (*Tectona grandis*) beams used in construction about 300 B.C. and in the early centuries of the Christian era are still in sound condition.—*E. N. Munns.*

6843. ELORRIETA, JOSÉ. Laboratorio Forestal del Gobierno federal de los Estados Unidos. [U. S. Forest Laboratory.] España Forest. 8: 37-38, 51-54. 2 pl. 1922.—The Forest Products Laboratory at Madison, Wisconsin, is described.—*W. N. Sparhawk.*

6844. E[LLORRIETA], O[CTAVIO]. La introducción de especies exóticas en España. [Introduction of exotics into Spain.] España Forest. 5: 27-28. 2 pl. 1919.—Large plantations of various species of *Eucalyptus* have been made by individuals and companies, and public authorities have planted some, notably near Malaga, where more than 80 species have been grown. Some eucalypts have given good results on dunes. Except for a few groups of *Larix europaea* and *Pinus montana*, attempts to introduce exotics in the Picetum of central Spain have failed. The introduction of 5-needled pines and various broad-leaved trees in the Fagetum and the Castanetum is also desirable. Excellent results have been obtained with a large number of conifers and broad-leaved species in the Cantabrian region. Trial of *Prosopis juliflora* in the semi-arid Lauretum of southwestern Spain is recommended.—*W. N. Sparhawk.*

6845. ELORRIETA, OCTAVIO. La ordenación de montes en España. [Forest regulation in Spain.] España Forest. 10: 140-145, 179-182, 1924; 11: 17-24, 43-46, 49-52. 5 pl. 1925.—The principles of forest regulation, developed in France and Germany subsequent to the time of Colbert and Frederick the Great, were introduced into Spain chiefly by Agustin Pascual. He became the 1st professor of forestry at the forest school founded in 1848 at Villaviciosa de Odón. Lucas Olazabal (1829-1899) organized and put into practise the working plans for many Spanish forests, and wrote a treatise on the subject which until recently was a standard text. The 1st working plan in Spain was put into effect in 1882, and a Section of Working Plans for the State forests was created in 1890. The principles upon which the plans were based are discussed in detail. Cutting was carried out by Cotta's method of successive clearings, with the intention of creating a forest of even-aged compartments. The results were poor, because the method was unfavorable to natural reproduction, especially on south slopes. The history of the regulation of several forests is described.—*W. N. Sparhawk.*

6846. ELORRIETA, OCTAVIO. Los pinares. [The pineries.] 38 p. Imp. Cleto Vallinas: Madrid, 1921.—A brief discussion of the forest practices, methods of cutting, growth and management for the local yellow pine (*Pinus pinaster*).—*E. N. Munns.*

6847. E[LLORRIETA], O[CTAVIO]. Proyecto de instrucciones para realizar el catastro de los montes. [Proposed instructions for a forest survey.] España Forest. 7: 33-36. 1921.—Details of the methods of classifying and appraising forests and forest lands are given.—W. N. Sparhawk.

6848. ENTRICAN, A. R. Preservative treatment for farm timber: methods for treating fence posts. New Zealand Jour. Agric. 30: 236-250. 1925.

6849. EREDIA, F. I boschi in relazione ai fattori meteorologici. [The forest in relation to meteorological conditions.] Atti del IV° Congresso Forestale Italiano 1921: 125-133. Udine, Italy, 1923.

6850. ESTEVE, MIGUEL A. Estudios anatómicos de las maderas. [Anatomical studies of woods.] España Forest. 5: 72-79, 89-92. 5 pl. 1919.—The paper deals with the anatomical structure of the wood of *Abies pectinata*, *A. pinsapo*, *Picea excelsa*, *Larix europaea*, *Pinus silvestris*, *P. montana*, *P. pinea*, *P. pinaster*, *P. halepensis*, *P. laricio*, *Juniperus oxycedrus*, *J. communis*, and *Taxus baccata*. Information is also given on the economic importance of these species.—W. N. Sparhawk.

6851. FALERO, JOSÉ MARTÍNEZ. Explotación y mejora de los montes de la Serranía de Cazorla. [Exploitation and improvement of the forests of the Cazorla range.] España Forest. 9: 122-123. 1923; 10: 13-14, 30-32. 1 pl. 1924.—These State forests, embracing 39,818 ha. on the head-waters of the Guadalquivir River and stocked principally with *Pinus laricio*, have been managed under a working plan since 1896. There are 11 forest nurseries, and more than 4,000,000 trees have been planted since 1910. The chief species planted are Scotch, Austrian, and Corsican pines and a few poplars.—W. N. Sparhawk.

6852. FARENHOLZ. *Pinus pinaster* an der deutschen Nordseeküste. [Pinus pinaster on the German North Sea coast.] Mitteil. Deutsch. Dendrol. Ges. 35: 330. 1925.—*P. pinaster* is hardy on the isle of Spiekeroog, one of the East-Friesian islands.—J. C. Th. Uphof.

6853. FAVRESSE, M. Le domaine des Epioux. Bull. Soc. Centrale Forest. Belgique 31: 643-652. 1924.—This is a short history and description of the forestry of Epioux.—H. T. Gisborne.

6854. FEHÉR, DANIEL. Die Entwicklung des höheren forstlichen Unterrichtswesens im heutigen Ungarn. [Higher forestry education in Hungary.] Centralbl. Gesam. Forstw. 50: 368-375. 1924.—The history of forestry education, beginning in 1808, is outlined, and the present course given at the Royal College of Mining and Forest Engineering at Sopron is described in detail.—W. N. Sparhawk.

6855. FENSKA, R. R., AND D. E. LAUDERBURN. Cruise and yield study for management. Jour. Forest. 22: 75-80 [637-642]. 1924.

6856. FERFER, J. Das Forst- und Domänenwesen der Resitaer Eisenwerke und Domänen A.-G. [Forestry and land management of the Resita Iron Works and Domain Corporation holdings.] Zeitschr. Forst.- u. Jagdw. 57: 625-633. 1925.—This is a newly created association in Banat. A brief history of the region, administrative organization, forest management, and the organization and management of land holdings is given. The forests are managed under a high forest system with some coppice, with 80-100 year rotation for the former and 40-60 for the latter. Regeneration is secured naturally by appropriate light cuttings, seed fellings and final cuttings.—J. Roesser, Jr.

6857. FERGUSON, J. A. Some recent developments in forestry education. Jour. Forest. 21: 278-283. 1923.—The rapid development of forest schools in America during the past 25 years has led to diversification in length of courses and in curricula, and the introduction of enough specialization to place in allied industries and professions men with some forestry training.—Philip C. Wakeley.

6858. FERGUSON, J. A. The rôle of bacteria in the successful growing of black locust. 38th Ann. Rept. Pennsylvania State Agric. Coll. Exp. Sta., Bull. 196. 25-26. 1925.—This is a report on a study of the relationship of nitrifying bacteria to the growth of locust (*Robinia pseudacacia*), of the stimulation of bacterial activity through inoculation or other treatment of the soil, and of the effect of inoculation with *Rhizobium leguminosum* or *R. radicicolum* upon the tree's resistance to attacks by the black locust beetle.—J. S. Joffe. (Contrib. by Absts. Bact.)

6859. FEUCHT, OTTO. Die Bodenpflanzen unserer Wälder. [The soil vegetation of our forests.] 123 p., 48 fig., 8 pl. Strecker und Schröder: Stuttgart, 1925.—This treats of many of the common German forest plants from fungi to shrubs, and the part they play in the forest community. Emphasis is laid on the interrelation between the character and condition of the trees and the subordinate plants.—W. N. Sparhawk.

6860. FISCHER, ARTHUR F. Annual report of the Director of Forestry of the Philippine Islands for the fiscal year ended December 31, 1924. 216 p., 1 pl., 1 chart. Bureau of Printing: Manila, 1925.

6861. FISCHER, ED. Ueber einige im botanischen Garten in Bern kultivierte Schlangenfichten. [Virgate forms of spruce in the Berne Botanical Garden.] Schweiz. Zeitschr. Forstw. 70: (1-4). 2 fig. 1919.—Seed of a specimen of *Picea excelsa virgata Cranstonii* Carr. sown in 1905, produced seedlings ranging in form from normal *P. excelsa* to distinct virgate (Schlangen-) types. On one of these the leader produced no side branches during the period 1914-1918, although it grew 2.42 m. in length. Upon transplanting, trees of this form put out normal branches for a year or more, but then resumed their characteristic form of growth.—W. N. Sparhawk.

6862. FISHER, R. T. A note on Harvard Forest silviculture. Jour. Forest. 23: 909-912 1925.

6863. FLECK. Feuerwachturm oder Sehrohr. [Fire-lookout tower or telescope.] Zeitschr. Forst.- u. Jagdw. 57: 505-506. 1925.—Describes a revolving tower and periscopic arrangement as a substitute for the ordinary fire-lookout tower. This structure permits employment of women, children and old people as fire observers, since no climbing is involved; it can be constructed for $\frac{2}{3}$ of the cost of an observation tower of equal height.—J. Roeser, Jr.

6864. FLINT, HOWARD R. The appraisal of forest fire damages. Jour. Forest. 22: 154-161. 1924.

6865. FOLEY, JOHN. The work of the foresters of the Pennsylvania Railroad system. Jour. Forest. 22: 162-170. 1924.

6866. FORBES, A. C. Some factors affecting a forest policy. Empire Forest. Jour. 3: 158-168. 1924.—The major obstacles to a progressive forest policy are the absence of a definite State land policy, the lack of adequate control or supervision of waste lands, and the lack of real discipline in rural communities. The principal remedy is education.—E. N. Munns.

6867. FORSLING, C. L. Grazing in pine plantations. Jour. Forest. 23: 905-908. 1925.

6868. FOSTER, F. W. Forestry in New Zealand. Empire Forest. Jour. 3: 45-52. 2 pl. 1924.—The forest area has been reduced by settlement, lumbering, and fire from 40,000,000 to 12,000,000 acres. About 52,000 acres have been planted to quick-growing species, mostly exotics. These include *Pinus laricio* (Austrian and Corsican pines) *Pinus ponderosa*, *Larix europaea*, *Pseudotsuga taxifolia*, *Sequoia sempervirens*, *Pinus radiata*, eucalypts, *Cupressus macrocarpa* and *Populus deltoides*.—E. N. Munns.

6869. FRANÇOIS, E. La culture des Acacias à tannin à Madagascar. [The cultivation of acacias for tannin in Madagascar.] Rev. Bot. Appl. et Agric. Coloniale 5: 348-358, 436-442. 1925.

6870. FRITZ, EMANUEL, AND JAMES L. AVERELL. Discontinuous growth rings in California redwood [*Sequoia sempervirens*]. Jour. Forest. 22: 31-38 [612-619]. 2 fig. 1924.

6871. FRÖHLICH, JUL. Ein Riesenexemplar der Eibe. [A gigantic example of yew.] Weiner Allg. Forst- u. Jagdzeitg. 43: 312. 1925.—This yew, growing in the upper Maros Valley in Transylvania, is estimated to be 1400 years old, has a diameter of 120 cm. and a height of 15 m.—F. S. Baker.

6872. FRONTZ, LEROY. Forestry as practiced by a corporation [Pennsylvania]. Jour. Forest. 23: 626-629. 1925.

6873. FROTHINGHAM, E. H. Forest research. Jour. Forest. 22: 343-352. 1924.

6874. FROTHINGHAM, E. H. Present stand of chestnut in North Carolina and Southern Appalachians. North Carolina Econ. Paper 56. 11-12. 1925.

6875. FROTHINGHAM, E. H. Some silvicultural aspects of the chestnut blight situation. Jour. Forest. 22: 861-872. 1925.—Blight of *Castanea americana*.

6876. G., M. De l'influence de diverses methodes d'exploitation sur la régénération du

Douglas. [The effect of various methods of cutting on the regeneration of Douglas fir.] Bull. Soc. Centrale Forest. Belgique 32: 102-109. 1925.—The author points out the increasing importance of Douglas fir in Belgian forestry and then translates into French a large part of Roeser's article, "A study of Douglas fir reproduction under various cutting methods." (Jour. Agric. Res., June 21, 1924.)—H. T. Gisborne.

6877. GARRATT, G. A. Some New Zealand woods: A study of the secondary wood of ten gymnosperms and eighteen dicotyledons, with keys to the identification of the latter. New Zealand State Forest Service Prof. Paper 1. 1-56. Government Printer: Wellington, 1924.

6878. GASKILL, ALFRED. Objectives in State forestry. Jour. Forest. 23: 583-588. 1925.

6879. GEETE, ERIK. Exkursion inom västra distriktet för den förvaltande skogspersonalen från Dalarnas distrikt. [Excursion in the Western District for the forest-administrative personnel from Dalecarlia District.] Skogsvårdsförr. Tidskr. 23: 381-386. 3 fig. 1925.—The Dalecarlian government forest officers visited forests in the Western District of Sweden where reproduction is easier to secure than in Dalecarlia and growth more rapid, and where grazing damage is one of the problems in the State forests.—Henry I. Baldwin.

6880. GERRY, ELOISE. Recent observations on the effects of turpentine on the structure of second growth slash and longleaf pines. Jour. Forest. 21: 236-241. 2 pl. 1923.—Field observations in southeastern Georgia and microscopic analyses in the Forest Products Laboratory at Madison, Wisconsin, show the importance in resin production of traumatic tissue formed above the face in turpentine, and indicate the inadvisability of chipping small trees or hanging 2 cups on the smallest trees fit to chip. Narrow chipping seems advisable. The study was confined to *Pinus caribaea* and *P. palustris*.—Philip C. Wakeley.

6881. GILLARDIN, CAM. Excursion forestière en 1923. La forêt de Soignes. [The 1923 foresters excursion to the forest of Soignes.] Bull. Soc. Centrale Forest. Belgique 31: 591-603. 2 pl. 1924.

6882. GILMORE, J. D. First steps in forest management [Newfoundland]. Jour. Forest. 23: 617-625. 1925.

6883. GORRIE, R. MACLAGAN. Femelschlagbetrieb—a Swiss system of forest management. Empire Forestry 1: 253-256. 1922.—The shelterwood compartment system with successive fellings over a long regeneration period, is described. The advantages of the method are said to be the establishment of tolerant species early in the rotation, the comparative certainty of reproduction, the continuous supply of timber of high quality, the continuous protection of the soil, and the opportunity afforded the forester to exercise his judgment in culling the woods. The system is not adapted to intolerant species and must be carried on by trained workers over a long period.—E. N. Munns.

6884. GORTANI, M. Il bosco come difesa del suolo nei riguardi idrogeologici. [The forest as a protector of the soil water.] Atti IV° Congresso Forestale Italiano 1921: 69-86. Udine, Italy, 1923.

6885. GOUDIE, H. A. The growing of electric transmission or telegraph poles: the tree species recommended for farm forestry. New Zealand Jour. Agric. 29: 243-253. 1924.

6886. GRAHAM, S. A. Forest entomological problems in the Lake States. Jour. Forest. 22: 24-28 [606-710]. 1924.

6887. GRANT, D. K. S. Forestry in Tanganyika. Empire Forest. Jour. 3: 33-38. 1924.—A large area of the country is savannah with some trees of commercial value, such as *Pterocarpus bursei*. The rain forest is particularly heavy and probably richer in species than forests farther north. Commercial timbers include camphor (*Ocotea usambarensis*), several species of yellowwoods (*Podocarpus*), cedar (*Juniperus procera*), and various mangroves. Little is known of the silvicultural requirements of the different species.—E. N. Munns.

6888. GRASOVSKY, AHIMUD. The use of the median in estimating standing timber. Jour. Forest. 23: 71-77. 1925.

6889. GRAVES, HENRY S. International cooperation by scientific agencies in tropical forestry. Pan American Union Forest. Circ. 5. 1-8. 1925.

6890. GREELEY, W. B. Forest management on federal lands. Jour. Forest. 23: 223-235. 1925.

6891. GREELEY, W. B. Softwood resources of the United States. Empire Forest Jour. 2: 207-217. 1923.

6892. GREGOIRE, EMILE. Notes concernant les incendies forestiers dus à l'exploitation des chemins de fer. [Notes on forest fires caused by railroads.] Bull. Soc. Centrale Forest. Belgique 31: 492-507. 4 fig. 1924.—The author uses the 4-year records of railroad fires as a basis for discussing the 3 principal methods of controlling fires: (1) Elimination of sparks and cinders, (2) localization of fires, and (3) suppression. The number of fires originating by 5-metre zones alongside the track are shown, as are also the number of fires by months. The 4 figures show methods of fire line distribution.—H. T. Gisborne.

6893. GRIFFITH, ROBERT W. Chestnut wood [*Castanea americana*] in the tanning industry. Jour. Forest. 22: 542-545. 1924.

6894. GUERRERO, SALVADOR. Instrucciones para la formacion de los planes provisionales de explotacion forestal. [Instructions for the formation of provisional forest management plans.] Mexico Dept. Bosques Circ. 5. 1-10. 1923.

6895. GUISE, C. H. Growth and its relation to thinning—sample plots studies in mixed hardwood stands. Jour. Forest. 23: 154-159. 1925.

6896. GUTHRIE, JOHN D. Forestry on Arizona State lands. Jour. Forest. 23: 378-385. 1925.

6897. GUTHRIE, JOHN D. Some notes on the forests of northern Russia. Jour. Forest. 22: 197-204. 1924.

6898. HAIG, I. T. Short cuts in measuring tree heights. Jour. Forest. 23: 941-944. 3 fig. 1925.

6899. HAIG, I. T. The application of normal yield tables. Jour. Forest. 22: 902-906. 1924.

6900. HANZLIK, E. J. Comparative increase in volume of artificially and naturally thinned stands [*Picea excelsa* in Sweden]. Jour. Forest. 22: 386-388. 1924.

6901. HANZLIK, E. J. Tree classification in Sweden. Jour. Forest. 22: 175-177. 1 fig. 1924.

6902. HARRER, FRANZ. *Larix occidentalis*, die West-Lärche. Mitteil. Deutsch. Dendrol. Ges. 35: 203-214. 3 pl. 1925.—This is a description of the tree and its habitat in the U. S. A.—J. C. Th. Uphof.

6903. HARTMANN. Ueber die Säbelwüchsigkeit der Bäume. [The saber-formed growth of trees.] Centralbl. Gesam. Forstw. 51: 165-194. 11 fig. 1925.—The effects of heliotropism, wind, stability, snow pressure, and earth slides are discussed. It is suggested that heredity may also play a part, through affecting the resistance or response of the tree to these external factors.—W. N. Sparhawk.

6904. HARTMANN, F. K. Untersuchungen zur Acidität märkischer Kiefern- und Buchenstandorte unter Berücksichtigung typischer Standortgewächse als Weiser. [Acidity investigation of pine and beech sites in the March (Brandenburg) with reference to typical ground vegetation as indicators.] Zeitschr. Forst.- u. Jagdw. 57: 321-350. 1925.—Determinations based upon the titration method of Daikuhara with pH check by the Gillespie method. Results are shown in tabular form. Two distinct surface vegetation groups were defined, one decidedly acid, the other mildly so as shown by the reaction scale. It is evident that the stand affects appreciably the degree of acidity, for under pure pine stands on terminal moraine soils exposed to light and warmth, very low acidity is the rule as compared with a high degree where spruce grows in mixture with beech.—J. Roesser, Jr.

6905. HASEGAWA, KOZO. [The determination of viability of seed by reagents.] (Japanese, English summary.) Bull. Forest Exp. Sta. Imperial Household 1: 1-16. 1 pl. 1925.—Percentage of viability may be determined quickly and fairly accurately by treating the crushed seed with tincture of guaiacum and 1.5% H_2O_2 . Guaiacol solution (1%) may be substituted for guaiacum. The enzymes in viable seed cause the liquid to become deep blue; dead seed give no reaction.—W. N. Sparhawk.

6906. HASEGAWA, KOZO. [The treatment of insect-infested chestnuts by boiling water.] (Japanese, English summary.) Bull. Forest Exp. Sta. Imperial Household 1: 35-38. 1925.—Insects (*Balanus camellae*, *Laspeyresia* sp. and *Dichocrocis punctiferalis*) attacking chestnuts can be killed by immersing the nuts for 20-25 seconds in boiling water. The percentage of germination is increased by this treatment, which can also be applied to acorns of *Pasania* and *Quercus*.—W. N. Sparhawk.

6907. HASTINGS, W. G. Revolutionizing nursery practice. *Jour. Forest.* 21: 180-182. 1923.—Working at the Vermont State Nursery, the author has reduced the cost of nursery stock $\frac{1}{3}$ by omitting transplanting, by root-pruning seedlings in place, and by cutting out all inferior seedlings.—*Philip C. Wakeley.*

6908. HATTON, JOHN H. To what extent should grazing be a factor in forest management plans? *Jour. Forest.* 22: 429-434. 1924.

6909. HAUSENDORF, R. Die Vorratspflege in den sächsischen und in den preussischen Staatsforsten. [Care of the growing stock in the Saxon and Prussian State forests.] *Zeitschr. Forst.- u. Jagdw.* 56: 607-616. 1924.—The history of forest management in Saxony illustrates the danger of over-utilization to which the growing stock on State forests is subjected by the strict application of mathematical formulae under the soil rental theory, as applied to a clear-cutting practice without regard to physical factors. In 1922 the finance ministry increased Pressler's prohibitive rotation of 85 years to 120 years for pine and 90 years for spruce and established new principles and objectives aimed towards building-up the growing stock and improving physical conditions. Under the supplemental working plan instructions of 1919 by Trebeljahr, Prussia is starting a course similar to Saxony's of 50 years ago. Under the new system, the actual rotation period on State forests is 95 years. In Prussia's present course, experiments are being made with the "continuous" forest ("Dauerwald") which will tend to mitigate the destructive influences of clear-cutting.—*J. Roesser, Jr.*

6910. HAUSENDORF. Zur Dauerwaldfrage. [The "continuous" forest question.] *Zeitschr. Forst.- u. Jagdw.* 56: 622-623. 1924.

6911. HAUSRATH, H. [Rev. of: BALSIGER, R. Der Plenterwald und seine Bedeutung für die Forstwirtschaft der Gegenwart. (The selection forest.) 2 Aufl. 1 Beiheft *Zeitschr. Schweizer. Forst.* Bern, 1925.] *Allg. Forst.- u. Jagd-Zeitg.* 102: 31-32. 1926.

6912. HAUSRATH, H. [Rev. of: KARL, WILHELM. Schlüssel zum Bestimmen einheimischer Hölzer nach äusseren Merkmalen. (Key for identification of native woods.) 24 p., 17 fig. Carl Gerold's Sohn: Wien.] *Allg. Forst.- u. Jagd-Zeitg.* 102: 32. 1926.

6913. HAUSRATH, H. [Rev. of: WIEDEMANN, E. Die praktischen Erfolge des Kiefern-dauerwaldes. (Practical results of the pine "Dauerwald.") Mit. Beiträgen von Hesselman, Albert, Behn, Schenck, Wittich, und Hartmann. Vol. 4. 184 p., 42 fig. Fr. Vieweg u. Sohn: Braunschweig, 1925.] *Allg. Forst.- u. Jagd-Zeitg.* 102: 67-71. 1926.

6914. HAWES, AUSTIN F. New England forests in retrospect. *Jour. Forest.* 21: 209-224. 1923.—Beginning with the earliest fragmentary accounts of New England's forests, such as Wood's of 1634 and Josselyn's of 1672, the author traces the region's forest history through the periods of agricultural extension (1620-1820), the rise and fall of the New England lumber industry (1820-1880), and forest devastation (1880-1923). In 3 centuries the virgin forest has been reduced from 95% to 5% of the total area of New England. The original stand, estimated at 400 billion feet, has dwindled to about $\frac{1}{3}$ that amount. Despite poor growth, $\frac{1}{2}$ - $\frac{3}{4}$ of each New England state is classed as woodland, and yet buildings are constructed almost entirely of lumber from the South and West. There is unprecedented need for systematic timber-raising.—*Philip C. Wakeley.*

6915. HAWKINS, GUY C. How one wood-using industry has made use of a forester. *Jour. Forest.* 22: 140-148. 1924.

6916. HAWLEY, RALPH C. Early development of white and red pine plantations [*Pinus strobus* and *P. resinosa*]. *Jour. Forest.* 22: 275-281. 1924.

6917. HAWLEY, RALPH C. Fifteen years of forestry. *Jour. Forest.* 21: 225-230. 1923.—The area now under management of the New Haven Water Company, Connecticut, approximates 10,000 acres and is being gradually increased. The forested area is being extended by planting pine, and the growing stock of hardwoods, depleted by chestnut blight, is being increased by cutting less than the annual growth. Objects and details of management, land classification by types and age classes, and annual cuts by classes of products are given.—*Philip C. Wakeley.*

6918. HEIM, F., J. MAHEU, ET M. CERCELET. Valeur papetière du "Bakaka" de Madagascar. [Value of paper from Madagascar bakaka.] *Bull. Agence Gén. Col.* 18: 360-372. 1925.—Paper from a form of *Sorghum vulgare* was dull white, soft, with a good rattle, and in general of good quality though lacking in suppleness.—*E. N. Munns.*

6919. HENKEL, J. S. **Forestry in southern Rhodesia: timber and fuel for tobacco growers.** Rhodesia Agric. Jour. 22: 23-32. 1925.

6920. HENRY, AUGUSTINE. **Les mannes du meleze et du sapin de Douglas.** [The sugary excretions of larch and Douglas fir.] Bull. Soc. Centrale Forest. Belgique 32: 182-188. 1925. —The chemical composition is described for these larch and fir deposits.—H. T. Gisborne.

6921. HERBERT, P. A. **Growth of hardwood trees.** Michigan Agric. Exp. Sta. Quart. Bull. 5: 81-83. 1922.—W. J. Beal established an arboretum at Michigan Agricultural College about 1878, planting 150 species of trees, mostly deciduous. As a result of no thinning and close spacing, after 45 years only 14 species are represented by more than 1 tree with a diameter of over 6 inches. The largest trees are chestnut (*Castanea dentata*), black locust (*Robinia pseudacacia*) and basswood (*Tilia glabra*), black walnut (*Juglans nigra*), butternut (*J. cinerea*), catalpa (*Catalpa speciosa*) and a few others. But these largest trees, except the ash (*Fraxinus americana*), are not reproducing themselves, while the sugar maple (*Acer saccharum*), beech (*Fagus atropunicea*), ironwood (*Carpinus caroliniana*) and a few other species are reproducing rapidly, so that the undergrowth that will eventually replace this upper story is almost all of the latter group of species.—Ernst A. Bessey.

6922. HERBERT, P. A. **Poisoning green timber.** Mich. Agric. Exp. Sta. Quart. Bull. 6: 60-61. 1923.—Arsenic compounds (especially sodium arsenite) may be used to kill trees but it is necessary to completely girdle the tree and pour the poison on the girdled area.—Ernst A. Bessey.

6923. HERBERT, P. A. **Sand blow planting.** Mich. Agric. Exp. Sta. Quart. Bull. 5: 198-199. 1923.—In the very actively blowing Haarlem sand blow area, poplars and willows were the best adapted for temporary relief. Being short-lived they must be followed by spruce or pine.—Ernst A. Bessey.

6924. HERBERT, P. A. **Sand ridge produces valuable timber.** Michigan Agric. Exp. Sta. Quart. Bull. 6: 177-180. 1924.—In 1913 a sandy ridge on the College farm was planted to 5 lots of conifers, namely: 6-year-old seedlings of western yellow pine and white pine, and white pine, Norway spruce and Douglas fir transplants. After 10 years the western yellow pine and the white pine transplants average a little over 3 inches in diameter at the base and 12-14 feet in height. The ground is completely shaded by these 2 plots and the sand has ceased blowing entirely.—Ernst A. Bessey.

6925. HERBERT, PAUL A. **The principles of forest insurance.** Jour. Forest. 22: 513-517. 1924.

6926. HESSELINK, E., EN J. HUDIG. **De invloed van eene bodembedekking bij stuifzand op den groei der dennen.** [Influence of soil covering on the growth of pine in drift sand.] Mededeel. Rijksboschbouwproefsta. 2: 129-184. 6 pl., 1 fig. 1925.—Three series of experiments were made, using for covering gravel, loam, heather, and lupine. The best growth was on plots with lupine scattered on the surface or mixed in the sand. It is concluded that a protective soil covering on sand is less important than has been supposed, and that only water supply and plant food influence tree growth.—W. N. Sparhawk.

6927. HILF, H. H. [Rev. of: EMIL WIMMER. **Die Lehre vom Forstschutz.** (The study of forest protection.) 303 p. P. Parey: Berlin, 1924.] Zeitschr. Forst.- u. Jagdw. 57: 704-706. 1925.—The less important forest insects should be dropped and more attention given to the important ones. Forest damage due to human causes is not considered. Instead of 3 chapters on forest protection against climatic influences, unfavorable edaphic factors, and destructive biotic factors, a classification based on damage caused by natural factors, organic and inorganic, and damage caused by man through improper management and outside of the scope of regulation, is suggested.—J. Roeser, Jr.

6928. HILF, UND WITTICH. **Zur Frage der Ausführung der Forleulenprobesammlungen.** [Organizing the work of sample collecting of Noctua piniperda.] Zeitschr. Forst.- u. Jagdw. 56: 730-732. 1924.—Stubenrauch erroneously stated that in Biesenthal the unit of measure for the number of pine Noctua pupae present in a stand is the tree. It is pointed out that the unit of measure is the sq. m. represented by 5 × 1 m. plots scattered throughout the stand which is to be examined.—J. Roeser.

6929. HOFMAN, J. V. **Best time for sowing silver fir in the nursery.** Jour. Agric. Res. 31: 261-266. 3 fig. 1925.

6930. HOHENHERK, L. S. **Forests of British Guiana.** *Empire Forest Jour.* 3: 169-179. 4 pl. 1924.—Forests are dense, and the stands are heavy. Some 250 species are known, many of them unidentified. Both swamps and highlands are forested, and away from the coast there are few areas without timber. Stands run 80-200 feet in height. Much of the accessible area has been culled for valuable wood. Species briefly described include: *Dimorphandra mora*, *Nectandra Rodioei*, *Carapa guianensis*, *Cedrela odorata*, *Loxopterygium sagotii*, *Eperua falcata*, *E. Schomburgkii*, *Mimusops globosa*, *Aspidosperma* sp. and *Clusia* sp.—*E. N. Munns*.
6931. HOLLAND, J. H. **Selection of Hevea brasiliensis.** *Kew Bull.* 1925: 44. 1925.—Considers seeding, artificial pollination, crossing, and results from tapping.—*T. J. Fitzpatrick*.
6932. HOPPING, RALPH. **Relation between abnormality and insect attacks in western yellow and Jeffrey pine stands** [*Pinus ponderosa* and *P. jeffreyi*]. *Jour. Forest.* 23: 932-935. 1925.
6933. HOSMER, RALPH S. **Immediate objectives of the Society.** *Jour. Forest.* 21: 107-110. 1923.—Among the obligations of the Society of American Foresters, numbering more than 800 professionally trained men, the author lists support of the expansion of the National forest policy, increased aid in educational work, and increased activity within the Society itself.—*Philip C. Wakeley*.
6934. HOWARD, STANLEY HERBERT. **General volume table for chir** (*Pinus longifolia*) **classified by diameter (and girth) and height.** *India Forest. Dept. Forest. Bull.* 58. 1-14. Government of India, Central Publ. Branch: Calcutta, 1924.
6935. HOWE, C. D. **Silviculture in Canada.** *Empire Forest. Jour.* 2: 172-181. 1923.—Canadian silviculture in general is crude. In the eastern forests it amounts to a selective cutting system to a 12-inch diameter limit. In the West, clear cutting is the rule. Many burned areas are now restocking naturally.—*E. N. Munns*.
6936. HU, H. H. [Special characters of forestry trees found in the southeastern provinces of China.] *Ko-Hsueh* [Science Publ. Chinese Sci. Soc.] 10: 1477-1484. 1925.—The writer discusses the trees of Kwangtung, Chekiang, Kiangsi, Fukien, and Anhwei provinces.—*Chunjen C. Chen*.
6937. HUFNAGL, LEOPOLD. **Die fürstliche Verhältnisse in der Tschechoslovakei.** [Forest conditions in Czechoslovakia. *Zeitschr. Forst.- u. Jagdw.* 57: 494-505. 1925.—The author presents a general description and discusses the forest policy, State forests, nun-moth ravages and subsequent reforestation, and the wood industry and trade. The 33.15% of forest land in Czechoslovakia falls into 2 distinct groups—the virgin stands of Slovakia in the east awaiting industrial development, and the regulated forests of the historical Sudetic Province in the west, which have long been under plan-wise management. Of the forest area, 52.5% is occupied by conifers.—*J. Roeser, Jr.*
6938. HUMMEL, C. **Report on the forests of British Honduras.** 122 p. Crown Agents for the Colonies: London, 1925.
6939. INGVASON, P. A. **Iceland forestry.** *Jour. Forest.* 22: 149-153. 1924.
6940. ITTU, M. **Nomenclatura română a arborilor și arbuștilor cu cronologia numirilor.** [The Rumanian nomenclature of trees and shrubs, with the chronology of names.] *Revista Pădurilor* 36: 218-239. 1924.
6941. J., L. F. **El castaño.** [The chestnut.] *España Forest.* 6: 33-35. 1920.—The growing of *Castanea vesca* for crating material, hoops, and staves is described. It is grown as coppice and is cut at 4 years of age for the small material and at 12-14 years for staves.—*W. N. Sparhawk*.
6942. JACOBS, ALLEN W. **Hastening the germination of sugar pine seed** [*Pinus lambertiana*]. *Jour. Forest.* 23: 919-931. 1925.
6943. JAPING. **Die Hauberge des Dillkreises.** [The coppice woodlots of the Dill circle.] *Zeitschr. Forst.- u. Jagdw.* 57: 577-604. 1925.—“Haubergsbetrieb,” in practice since the 15th century, is characterized in its original form by a combination of coppice forest, pasture, and agricultural management. The development of the system, form of ownership, economic condition, management policy, and critical considerations for future management are considered. Silvicultural improvement of the Hauberg areas is only to be secured by the con-

version of coppice stands into high forest, this conversion being supported by legal measures.—*J. Roesser, Jr.*

6944. JONES, G. WILLARD. Forest nursery working practice at Savenac Nursery [Montana]. *Jour. Forest.* 23: 635-644. 1925.

6945. JULIUS, E. Annual progress report upon State forest administration in South Australia for the year ended June 30th, 1925. *Ann. Prog. Rept. Woods and Forests Dept. South Australia.* 11 p. 1925.—This is the usual administrative report describing the general features of the year's work. During the year, 1778 acres were planted, chiefly to pine.—*C. F. Korstian.*

6946. KAGEYAMA, J. [Mathematical investigations on the relation between intensity of sunlight and growth of trees.] (Japanese.) *Res. Bull. College Exp. Forests, College Agric. Hokkaido Imp. Univ. [Sapporo]* 3²: 1-208. 38 fig. 1925.

6947. KEET, J. B. Trees and shrubs of the bushveld portions of Pretoria, Rustenburg and Waterburg Districts of the Transvaal. *Jour. Dept. Agric., Union South Africa* 10: 306-323. 1925.

6948. KESSELL, S. L. Report of the forests department for the year ended 30th June, 1925. *Ann. Prog. Rept. Forests Dept. Western Australia.* 60 p. 1925.—This is the usual administrative report describing the general features of the year's work. Detailed statistics are given in 7 appendices. The results accomplished in forestation work to date are summarized.—*C. F. Korstian.*

6949. KIENITZ, M. Zur Saatgutsortierung. [Forest tree seed grading.] *Zeitschr. Forst.- u. Jagdw.* 56: 710-716. 1924.—Admitting the advantage of strong seedlings, general application of the procedure must however be viewed with some apprehension. The forester is not primarily concerned with seed production and size and weight of seed, but with procuring certain qualities in the crop of trees. Tree character is important; size of seed, subordinate. A comparison of seed and species is sufficient to prove that size of seed and eventual growth do not run hand in hand. A separation can only be considered vital when the seed of 1 tree or of a single, well-developed race is considered. In mixed stands where all forms of trees are found, the weight and size of seed should not be a criterion for selection. Proper seed selection is best secured by careful thinning of stands in order to leave only select parent trees.—*J. Roesser.*

6950. KING, N. L. *Pinus insignis* Doug. in South Africa. *Union South Africa Forest Dept. Bull.* 15. 30 p. 1925.—This bulletin discusses the distribution, silvicultural treatment, growth, yield and financial returns of Monterey pine.—*C. F. Korstian.*

6951. KIRKLAND, BURT P. Flexible rotation in American forest organization. *Jour. Forest.* 23: 136-147. 1925.

6952. KITTREDGE, JOSEPH, JR. A proposed classification of the forest types of the Lake States. *Jour. Forest.* 23: 890-895. 1925.

6953. KITTREDGE, JOSEPH, JR. Use of statistical methods in forest research. *Jour. Forest.* 22: 306-314. 1924.

6954. KLEINSTÜCK, MARTIN. Holz und Holzpflege bei Japanern. [Wood utilization by the Japanese.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 304-319. 2 pl. 1925.—The paper includes descriptions of the treatment and formation of trees, use of lumber, growing of dwarf trees, wood industry in the Hakone Mountains, and the Japanese wax industry from *Rhus vernicifera*.—*J. C. Th. Uphof.*

6955. KNUCHEL, HERMANN. Ein neuer Höhenmesser. [A new hypsometer.] *Schweiz. Zeitschr. Forstw.* 76: 273-279. 2 fig. 1925.

6956. KONTOS, P. [Rev. of: KONTOS, P. Διαχειριστὶς Ἑλληνικῶν Δασῶν. (Greek forest regulation.) 842 p. Hellenogallikon Typographeion: Athens, 1924.] *Centralbl. Gesam. Forstw.* 51: 204-216. 1925.

6957. KRAUCH, HERMANN. Acceleration of growth in western yellow pine stands after cutting [*Pinus ponderosa*]. *Jour. Forest.* 22: 39-42 [620-623]. 1924.

6958. KRAUCH, HERMANN. A method of determining the technical rotation for yellow pine stands of Arizona and New Mexico. *Jour. Forest.* 21: 273-277. 1923.—Western yellow pine in Arizona and New Mexico occurs typically in even-aged, isolated groups with a con-

siderable range in diameter within each group. Either average diameter or average volume of groups of different ages may be combined in a table showing the age at which the trees reach a merchantable size.—*Philip C. Wakeley.*

6959. KRAUCH, HERMANN. Comparison of tape and caliper measurements. Jour. Forest. 22: 537-539. 1924.

6960. KRAUSE, K. Waldverwüstung im Orient. [Destruction of the forests in the Orient.] Naturwissenschaften 13: 834-836. 1925.

6961. KÜMMEL, JULIUS F. Relative water-holding capacity of sphagnum and tree moss. Jour. Forest. 23: 181-182. 1925.

6962. LACRUE, M. T. El aguarrás español de pino alepo. [Spirits of turpentine from the Spanish Aleppo pine.] 8 p. Inst. Central Exp. Tecnico-Forestales: Madrid, 1923.—Distillation values under different methods of treatment are given for the turpentine from *Pinus halepensis*.—*E. N. Munns.*

6963. LACRUE, MARIANO TOMELO. Relaciones entre la actividad optica del aguarrás y la temperatura. [Relation between light activity of spirits of turpentine and the temperature.] 18 p. Inst. Central Exp. Tecnico-Forestales: Madrid, 1924.

6964. LANE-POOLE, C. E. Federal forestry policy. Australian Forest. Jour. 8: 284-297. 1925.

6965. LARSEN, J. A. Methods of stimulating germination of western white pine seed. Jour. Agric. Res. 31: 889-899. 2 fig. 1925.—To hasten germination of "rebellious" western white pine (*Pinus monticola*) seed, the following experiments were conducted: Stratification in sand, chemical treatment, mechanical abrasion, exposure to low temperature, and soaking in moist saw dust. Stratification in sand or soil had little value as a pregermination treatment. Reduction of the seed coat by immersion in concentrated sulphuric acid hastened germination; soaking and warming of the seed in moist, bark-free sawdust for 3 weeks was also effective. Freezing, with or without previous soaking, hastened germination but in a lesser degree. Mechanical treatment injures the seed. Delayed germination of this seed appears due to obstruction of the seed coat itself rather than to any inherent quality or tendency to after ripening.—*Author.*

6966. LARSEN, J. A. Trend of silviculture development in Germany. Jour. Forest. 22: 506-512. 1924.

6967. LAUDERBURN, D. E. Forest management as practiced by the Pejepscot Paper Company. Jour. Forest. 23: 611-616. 1925.

6968. LAUTERBORN, R. [Rev. of: BARBEY, A. *Traité d'entomologie forestière à l'usage des sylviculteurs, des reboiseurs, des propriétaires des bois et des biologistes.* (Forest entomology.) 8 pl., 498 fig. 2^e ed. Beyer-Levrault: Paris, 1925.] Allg. Forst.- u. Jagd-Zeitg. 102: 71-72. 1926.

6969. LÄUTERER, BENNO. Eiben in Deutschland. [*Taxus baccata* in Germany.] Mitteil. Deutsch. Dendrol. Ges. 35: 191-200. 1925.

6970. LECOMTE, HENRI. Les bois coloniaux. [Colonial woods.] 194 p., 28 fig. A. Colin: Paris, 1923.—After describing the wood anatomy, the author shows how the various wood characteristics develop. Woods are described from a number of the colonies, their possible uses are outlined, and a description is given of the conditions under which exploitation is possible. Two hundred genera are mentioned.—*E. N. Munns.*

6971. LEININGEN. [Rev. of: MITSCHERLICH, E. A. *Bodenkunde für Land- und Forstwirte.* [Soil science for farmers and foresters.] 4th ed., 339 p. 32 fig. Paul Parey: Berlin, 1923.] Centralbl. Gesam. Forstw. 50: 79-82. 1924.

6972. LEOPOLD, ALDO. Grass, brush, timber, and fire in southern Arizona. Jour. Forest. 22: 1-10 [582-591]. 1924.

6973. LI, T. T. Do thinnings actually increase growth per acre as compared to unthinned stands? Jour. Forest. 21: 125-128. 1923.—Analysis of measurements of thinned and unthinned white pine (*Pinus strobus*) stands at Keene, New Hampshire, indicates a net periodic growth 123%-134% greater in thinned plots than in a check plot, about $\frac{1}{2}$ attributable to accelerated production and $\frac{1}{2}$ to material lost by death in absence of thinning.—*Philip C. Wakeley.*

6974. LIEFMANN, ROBERT. Zur Productivitätstheorie. [Theory of productivity.] *Zeitschr. Forst.- u. Jagdw.* 56: 732-738. 1924.—An answer to Lemmel's 2 articles in this journal (1922), in which Liefmann's views concerning the theory of economic productivity as applied to forestry were attacked.—*J. Roeser, Jr.*

6975. LÖNNROTH, ERIK. Undersökningar över die inners Struktur und Entwicklung gleichaltriger naturnormaler Kiefernbestände. [Investigations on the inner structure and development of normal even-aged natural pine stands.] *Acta Forest. Fennica* 30. (2 + 269 + 44) 60 fig. Helsinki, 1925.—This statistical study of the composition of fully stocked natural stands takes up in detail, for different site classes at all stages from seedlings to maturity, the number of stems, heights, crown classes, diameters, basal areas, and volumes. The stands under investigation are described, and also the statistical methods that were used. Previous investigations are summarized and a bibliography of some 650 titles is appended, together with numerous graphs.—*W. N. Sparhawk.*

6976. LOTHIGIUS, VILH. Översikt över skogsvårdsstyrelsernas verksamhet under år 1924. [Summary of the activity of the Forest Conservation Boards in 1924.] *Skogsvårdsför. Tidskr.* 23: X343-X379. 1925.—The National Forest Survey has found that 77% of the forest land of Sweden is in private ownership, and hence falls under the jurisdiction of the Forest Conservation Boards. The work of these boards has been exceedingly diversified, comprising advice to owners on marking, cutting, planting, ditching, mapping, regulation of grazing, etc., and on cleaning and distribution of forest tree seed (28,000 kgm.) and planting of stock. Nurseries operated by the boards now contain over 72 million seedlings and transplants. In 1924, seeding and planting under the direction of the boards was carried on over 19,600 ha. Forest fires on lands under the supervision of the boards were insignificant. The area burned over was only about 110 ha. Since the establishment of the boards in 1905 the demands made upon them have constantly increased, and the funds available are never sufficient. Little difficulty is encountered in enforcing the law under which the boards were created and now function.—*Henry I. Baldwin.*

6977. LOVERIDGE, EARL W. Spruce barrens and sheep grazing. *Jour. Forest.* 22: 806-809. 1924.

6978. LOWDERMILK, W. C. Erosion and floods in the Yellow River watershed [China]. *Jour. Forest.* 22: 11-18 [592-599]. 1924.

6979. LOZANO, FRANCISCO. La importancia de los laboratorios forestales en la economía de Europe. [The importance of forest products laboratories for Europe.] *España Forest.* 8: 39-42. 1922.—The field of investigation in methods of conserving and utilizing wood is outlined.—*W. N. Sparhawk.*

6980. LUDWIG, WALTER D. Reforestation progress and costs in southwestern Pennsylvania. *Jour. Forest.* 22: 184-189. 1924.

6981. LUDWIG, WALTER D. Serious ground fires in southwestern Pennsylvania. *Jour. Forest.* 21: 248-253. 1923.—The unprecedented drought occurring in southwestern Pennsylvania in the summer and fall of 1922 prepared the way for combined ground, surface, and crown fires, which the author describes with appropriate meteorological notes. The worst fires were in Cambria Co., in young second-growth Appalachian hardwoods.—*Philip C. Wakeley.*

6982. LYONS, R. W. Artificial regeneration of white spruce [*Picea canadensis*]. *Jour. Forest.* 23: 1002-1008. 1925.

6983. MCINTYRE, H. L. Gipsy moth situation as it applies to New York. *Jour. Forest.* 22: 69-74. 1924.

6984. MACMILLAN, W. B. A study in comparative lengths of tracheids of red spruce [*Picea rubens*] grown under free and suppressed conditions. *Jour. Forest.* 23: 34-42. 1925.

6985. MALDONADO, ERNESTO. Contribución al estudio de la industria maderera y bosques chilenos. [Contribution to the study of the lumber industry and the Chilean forests.] *Rev. Chilena Hist. Nat.* 29: 70-131. 1 pl., 10 fig. 1925.—This paper is divided into 3 sections: (1) General information about the forests, giving an account of their distribution and extent in Chile, recounting for each province the main species of trees; (2) actual state of exploitation of the forests, giving details of lumbering and wood industries; (3) description of the principal species, enumerating, with description, giving both scientific and vulgar names and summaries

of distribution and many details of exploitation and economic uses, the 40 most valuable species of Chilean trees.—*F. W. Pennell.*

6986. [MAL'TSEV, A. I.] МАЛЬЦЕВ, А. И. К характеристике древесных пород в Каменно-Степных насаждениях экспедиции проф. В. Докучаева. [List of trees and shrubs on the plantations of V. Dokuchajev in "Kamennaja Stepj" (Prov. Voronesh).] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14⁴: 325-341. 1924-1925 [1925].—Thirty years ago Dokuchajev, to control the drought in the steppes, established protective plantations in Kamennaja Stepj. A great diversity of trees and shrubs was tried. A list is given of the species surviving in these plantations. Although many species proved unable to endure the steppe climate, the majority survived and are developing normally.—*Author.*

6987. MARCHETTANO, ENRICO. Atti del IV° Congresso Forestale Italiano. [Proceedings of the fourth Italian Forestry Congress, July 24-29, 1921.] 362 p. Udine, Italy, 1923.

6988. MARSHALL, ROBERT. Recreational limitations to silviculture in the Adirondacks. Jour. Forest. 23: 173-178. 1925.

6989. MARSHALL, R. C. Report on forestry in Trinidad and Tobago. Council Paper 108. 20 p. Map. Govt. Printing Office: Port-of-Spain, Trinidad and Tobago, 1924.

6990. MASON, MICHAEL H. The arctic forests. 320 p. 53 pl., 2 maps. Hodder and Stoughton: London, 1924.

6991. MATTOON, W. R. Growth of shortleaf pine (*Pinus echinata* Mill.) planted in District of Columbia and New Jersey. Jour. Forest. 21: 284-285. 1923.—The average height and d.b.h. of 8 shortleaf pines 11 years old and 9 years in plantation were 14.1 feet and 3.3 inches, respectively.—*Philip C. Wakeley.*

6992. MATTOON, W. R., AND A. F. HAWES. Common forest trees of Connecticut. Office of State Forester: Hartford, 1925.

6993. MAXWELL, JOHN S. The planting of peat land. Jour. Cambridge Univ. Forest Assoc. 2³: 7-10. 1925.—Experience in afforesting peat land in Inverness-shire, Scotland, is outlined. Excessive moisture which excludes air from the roots is claimed to be the main obstacle to tree growth, but the wettest peat is usually the best for trees after it is drained. Drainage should not be too deep, and the shallow minor ditches should be only 15-20 feet apart. Mound planting of 2-year seedlings of Scotch pine or 2-1 transplants of Sitka or Norway spruce is best, using the material taken from the ditches for the mounds. It is desirable to use a small amount of basic slag fertilizer. Spruce requires some side shelter, such as is afforded by scattering Scotch or mountain pine.—*W. N. Sparhawk.*

6994. MAYR, HEINRICH. Waldbau auf naturgesetzlicher Grundlage. Ein Lehr- und Handbuch. [Silviculture on a biological basis.] 2nd ed., viii + 568 p. 27 fig., 3 pl. Paul Parey: Berlin, 1925.—The same as the 1st edition published in 1908.—*W. N. Sparhawk.*

6995. MEAD, J. P. Forestry in Sarawak. Empire Forest. Jour. 4: 92-99. 3 pl. 1925.

6996. МЕЕК, CHAS. R. Forest fire education and publicity methods. Jour. Forest. 21: 242-247. 1923.

6997. MEINECKE, E. P. Forest protection—diseases. (With comment by J. S. Boyce.) Jour. Forest. 23: 260-269. 1925.

6998. MERKER, GUSTAV. Ueber Zuwachsprozentformeln. [Increment per cent formulas.] Centralbl. Gesam. Forstw. 50: 335-339. 1924.

6999. MERKL, ADOLF. Das Forstwesen in der Rechtsentwicklung der österreichischen Republik. [Forestry legislation in the Austrian Republic.] Centralbl. Gesam. Forstw. 51: 293-314. 1925.

7000. MERRIAM, JOHN C. Scientific research to aid redwood [*Sequoia sempervirens*] reforestation. Jour. Forest. 22: 803-805. 1924.

7001. METCALF, WOODBRIDGE. Artificial reproduction of California nutmeg [*Torreya californica* Tor. (*Tumion californicum* Greene)]. Jour. Forest. 23: 62-70. 1925.

7002. METCALF, WOODBRIDGE. Artificial reproduction of redwood [*Sequoia sempervirens*]. Jour. Forest. 22: 873-893. 1924.

7003. METCALF, WOODBRIDGE. Fumigating and sterilizing tree seed [*Sequoia sempervirens*]. Jour. Forest. 23: 508-512. 1925.

7004. MITCHELL, MARGARET R. Some observations on the effects of a bush fire on the vegetation of Signal Hill. Trans. Roy. Soc. South Africa 10: 213-238. 3 pl. 1922.—After a fire, fewer species appear and the ground becomes less fully stocked. Burning favors the spread of *Elytropappus rhinocerotis*. Erosion is severe on burned areas.—*E. N. Munns*.

7005. MEYER. Die Schnellwuchsigen Ausländer und ihre Bedeutung für die deutsche Forstwirtschaft. [Rapidly growing exotics and their significance in German forestry.] Illus. Landw. Zeitg. 43: 321-322, 329, 344. 1923.—On account of the successful introduction of Douglas fir (*Pseudotsuga taxifolia*), Balsam fir (*Abies lowiana* (*A. lasiocarpa*)), and Japanese larch (*Larix liptolepis*) into Germany.—*John W. Roberts*.

7006. MINAS Y MONTES, DIRECCION GENERAL DE AGRICULTURA [SPAIN]. Estadística general de la producción de los montes públicos. [General statistics of production from the public lands.] 32 p. Imprenta Cervantina: Madrid, 1925.—Statistics of the acreage, stands, forest products from the public lands in 1922-1923 are given in considerable detail.—*E. N. Munns*.

7007. MIYAI, K., AND M. OHSAWA. Experiments in the bending strength of frozen wood. Res. Bull. Coll. Exp. Forests Hokkaido Imp. Univ. 24: 1923.

7008. MOLL. Moderne Aufgaben der Holzkonservierungstechnik. [Problems in the technique of wood preservation.] Zeitschr. Forst.- u. Jagdw. 57: 115-118. 1925.—German progress in wood impregnation and preservation since 1840 is reviewed. Of the many highly advertised patent processes, only the Rüping creosote process, improved kyanisation, and the sodium fluoride-dinitrophenol salt mixture have proved advantageous and practicable.—*J. Roesser, Jr.*

7009. MOORE, D. R. Canary Island pine (*Pinus canariensis*). Australian Forest. Jour. 8: 262-264. 1925.—A comparison of the modulus of rupture, compression along the grain, and compression across the grain showed that *Pinus canariensis* is almost twice as strong as *P. insignis* and slightly stronger than *Eucalyptus obliqua*. Although it grows more slowly, *P. canariensis* is more drought-resistant than *P. insignis*; methods of seeding are suggested for the former.—*C. F. Korstian*.

7010. MORRELL, FRED. A forest policy for the Northwest. Jour. Forest. 23: 355-364. 1925.

7011. MORSE, HOWARD B. Government responsibility in forest regulation. Jour. Forest. 21: 269-272. 1923.—The author outlines a scheme whereby, in the interest of sufficient timber production combined with just treatment of private owners, the Federal government would collect uniform yield taxes on timber cut, pay states their share of such taxes, furnish and compel forest insurance, provide fire protection, enforce uniform cutting and slash disposal regulations, and if necessary finance reforestation, on all wild lands in each of several regions into which the U. S. A. might be divided.—*Philip C. Wakeley*.

7012. MORTON, B. R. Tree repairing. Dept. Interior, Canada, Forest. Branch Bull. 73. 22 p., 27 fig. Ottawa, 1922.—Information is given on fundamental principles of tree surgery.—*E. N. Munns*.

7013. MORUZI, NICOLAS J. La richesse forestière de la Roumanie. [Forest wealth of Rumania.] 121 p. Jouve & Cie.: Paris, 1924.—Rumania now has 7,094,056 ha. of forest (24.1% of the land area), of which conifers (pine and spruce) occupy 25%, oak 22%, and mixed broad-leaved species 53%. The forests of the various provinces are described, with a brief account of their exploitation and economic importance. The history of forest legislation, culminating in the laws of 1923-1924, is outlined. A bibliography is appended.—*W. N. Sparhawk*.

7014. MÜHLHAUSEN. Aus der Nassau-Oranischen Forstgeschichte von 1450-1800. [Forest history of Nassau-Orange from 1450 to 1800.] Zeitschr. Forst.- u. Jagdw. 57: 449-472. 1925.—The progressive development of the administrative side of forest management in the Nassau-Orange provinces from the institution of the first forest legislation to 1800 is described. Forest administrative organization; character and silvicultural aspect of forest regulations; legal efforts directed toward grazing control, need of which was noted as far back as 1553; legislation against various kinds of forest offense; and relation of various kinds of ownership are considered.—*J. Roesser, Jr.*

7015. MULLOY, GEO. A. Measurement of young plantation plots. Jour. Forest. 23: 290-296. 1 fig. 1925.

7016. MUNGER, THORNTON T. Practicable forestry steps in the Douglas fir region [Oregon and Washington]. Jour. Forest. 22: 291-297. 1924.

7017. MUNGER, THORNTON T. (CHAIRMAN) AND OTHERS. Report of the committee on the type and use of yield tables. Jour. Forest. 22: 533-536. 1924.

7018. MUZZALL, A. H. Rubber [*Hevea brasiliensis*] plantations as a forest rather than horticultural industry. Jour. Forest. 22: 762-767. 4 fig. 1924.

7019. MUZZALL, A. H. Silvicultural notes on the Benguet pine [*Pinus insularis* in Philippine Islands]. Jour. Forest. 23: 887-889. 1925.

7020. NACHTIGALL. Die Fichte im Hügelland zwischen Harz und Solling. [Norway spruce (*Picea excelsa*) in the hilly country between Harz and Solling.] Zeitschr. Forst.- u. Jagdw. 56: 527-544. 1924.—The territory between Harz and Solling is characterized by a transition climate which has no characteristic forest type, but is primarily hardwood. About $\frac{1}{2}$ the spruce stands were started under oak and beech and the other $\frac{1}{2}$ by afforestation of non-forest area. Growth is governed by local climate and by the physical rather than the chemical composition of the soil, especially as it relates to moisture content. Summer droughts are the most serious factor which spruce stands have to combat. Closely associated with drought is red rot (*Pourriture rousse*). Growth data are meager because the stands are young. The yield of 65 year old stands rarely exceeds 300 cu. m. per ha. with an average height of 20 m. The recent dry years have cut down increment appreciably. Pure stands should be avoided in the second generation, and mixing with hardwoods is recommended.—*J. Roeser, Jr.*

7021. NÁJERA, FERNANDO. Apuntes para un dendrometro. [Suggestions for a dendrometer.] España Forest. 5: 60-62. 5 fig. 1919.—A hand instrument for measuring heights and diameters is described. It does not require measurement of the distance from the observer to the tree.—*W. N. Sparhawk.*

7022. NÁJERA, FERNANDO. Dos nuevos aparatos de medida. (1) Un autografo electrico de crecimientos; (2) forcepula registradora automatica. [New measuring devices: (1) An electrical dendrometer; (2) a self-registering caliper.] 32 p. 2 pl., 12 fig. Inst. Central Exper. Tecnico-Forestales: Madrid, 1924.—Description of 2 instruments, the 1st based upon the models used by Freidrich in 1897 and as improved by MacDougall; the 2nd based upon the need for reliable recording calipers.—*E. N. Munns.*

7023. NEUBAUER, WILHELM. Der Kampf um den Wald. [The fight over the forest.] Centralbl. Gesam. Forstw. 51: 145-159. 1925.—The proposed commercialization of Austrian State forests is condemned.—*W. N. Sparhawk.*

7024. NEUBAUER, WILHELM. Die Bestandesaufnahme nach dem Verfahren des Massenmittelstammes und nach Stammklassen gleicher Masse. [Measuring stands by the "stem of average volume" method and by the "stem-classes of equal volumes" method.] Centralbl. Gesam. Forstw. 50: 23-33, 105-115. 1924; 51: 1-29, 90-111. 1925.—These new methods, in which the results obtained from volume tables are checked by measuring sample trees of average volume, are said to be more accurate than other methods of computing the volume of stands.—*W. N. Sparhawk.*

7025. NICOARĂ, F. Cultura și vegetația speciilor exotice în parcul Școalei de brigadieri silvici din Gurghiu. [The culture and vegetation of the exotic species in the park of the School of Silviculture of Gurghiu.] Revista Pădurilor 37: 301-322. 1925.—The author studying the vegetation and possibility of culture of 187 exotic forest species in this park (Rumania, Transylvania) establishes the fact that many of these species would find in Rumania even better conditions than in the places of their origin. He suggests their culture progressively in suitable regions and shows their importance for Rumania.—*Emil Pop.*

7026. NORTH BORNEO. Annual report on the Forestry Department for 1923. Suppl. to Official Gazette 1924: 67-71. 1924.

7027. OBERDIECK. Mützelburger Kiefern-Naturverjüngung und die Duesbergsche Schattenkiefer in ihrem Verhalten beim Raupenfrass. [The Mützelburg system of natural regeneration of pine and the Duesberg "shade" pine in its relation to damage by caterpillars.] Zeitschr. Forst.- u. Jagdw. 56: 522-527. 1924.—The Duesberg system of natural regeneration

of pine calls for a rather long regeneration period under heavy shelter. Night-moth (*Noctua*) attacks have done much damage in cut-over stands, and it is significant that damage has been least in young growth where the shelterwood has almost disappeared naturally before the attack has started. The results emphasize the desirability of a short regeneration period, within 5 years; and a shelterwood of vigorous trees, whose seed produce seedlings which grow much more rapidly during the first 5 years than seedlings from older trees. The "shade" form of pine reproduction is incapable of recuperating after being badly attacked by caterpillars. Pine stands subject to night-moth attacks should be thinned often.—*J. Roeser, Jr.*

7028. ÖLBERG. *Ergebnis eines Versuches, die Forleule durch Prällen und Leimen zu bekämpfen.* [Results of an experiment to combat pine *Noctua* by shaking and glueing.] *Zeitschr. Forst.- u. Jagdw.* 57: 113-115. 1925.—Striking the stems of the trees and shaking fails to remove all caterpillars and is likely to injure the tree. Bands of glue around the trunk help to check the pest, but the bands must be fairly wide.—*J. Roeser, Jr.*

7029. OLIPHANT, J. N. *Development of forestry in British Honduras.* *Empire Forest Jour.* 4: 39-44. 1925.

7030. OPRESCU, A. *Din toponimie Olteniei in legătură cu pădurile.* [Toponymy of Oltenia in relation to the forests.] *Revista Pădurilor* 36: 611-624, 694-714. 1924.—The author brings together a great number of place-names relating to woods and forests in order to establish the reciprocal invasions of the forest and the steppes in the Rumanian province of Oltenia.—*Emil Pop.*

7031. OSTWALD, E. *Über Quadratmeter-Taxwerte.* [Square meter appraisements.] *Zeitschr. Forst.- u. Jagdw.* 57: 236-244. 1925.—A system of calculating the values of even-aged and uneven-aged stands is described.—*J. Roeser, Jr.*

7032. [OVSIANNIKOV, V. F.] ОВСЯННИКОВ, В. Ф. *Искусственное разведение и акклиматизация древесных пород Дальнего Востока.* [Artificial culture and acclimatisation of forest species of the Far East.] (English summary.) *Труды Прикл. Бот. и Селекции* [Bull. Appl. Bot. & Plantbreed.] 14: 193-226. 1924-1925 [1925].—Climatic and soil conditions of the Primorskaja and Priamourskaja provinces of the Far East are described. The forest tree species growing in that region are listed and the characteristics of more important ones are given.—*M. Demerec.*

7033. PAERELS, J. J. *Eenige der belangrijkste Boschproducten uit Ned. Indië.* [Important forest products from Dutch East India.] *Cultura* 34: 73-76. 1922.—Damar resin and copal are mainly obtained from *Agathis alba* and members of the Dipterocarpaceae, especially the genera *Shorea*, *Hopea* and *Vatica*.—*J. C. Th. Uphof.*

7034. PAERELS, J. J. *Eenige der belangrijkste Boschproducten uit Ned. Indië.* [Important forest products from Dutch East India.] *Cultura* 34: 117-222. 1922.—Baros camphor is derived from *Dryobalanops aromatica*. It is not present in all trees. According to the age of the trees, 3 kinds of oil are derived: oembil teboe, oembil tengah and dembil djadi. The latter changes into camphor after standing. Solidification may be stimulated by adding rice flour, albumen or camphor crystals. Twelve-year-old trees produce camphor crystals. *Blumea balsamifera* and *Artemisia* spp. produce borneol. Vegetable tallow is obtained from *Isoptera* and *Shorea* spp. Plant fats are derived from *Palaquium*, *Payena*, *Illipe*, *Litsea* and *Xanthophyllum* spp.—*J. C. Th. Uphof.*

7035. PAERELS, J. J. *Eenige der belangrijkste Boschproducten uit Ned. Indië.* [Important forest products from Dutch East India.] *Cultura* 34: 185-188. 1922.—The principal rattan palms on the market are *Calamus Manan* which produces rattan manan used for cables and construction of hanging bridges. *C. ornatus* is used for cables of ferries. *C. caesius*, much prized by the natives for its strength and flexibility, is extensively cultivated and rarely found in a wild condition. *C. trachycolens* and *C. optimus* come from Borneo. The latter is manufactured into whips. *C. scipionum* is used for Malacca canes.—Rattan is grown on a sandy and not too swampy soil. The plants are propagated from seed or cuttings. Seed are extracted from the berry, placed in baskets and kept moist; after 14 days they start to germinate and are then sown in beds; 1-2 months later they are transplanted. *C. trachycolens*, *C. viminalis*, *C. albus*, and *C. optimus* are recommended for commercial planting.—*J. C. Th. Uphof.*

7036. PAERELS, J. J. Eenige der belangrijkste Boschproducten uit Ned. Indië. [Important products from Dutch East Indies.] *Cultura* 34: 225-235. 1922.—*Bambusa vulgaris* is much cultivated in Java. The stems are used for furniture and the young shoots are eaten. *B. nana* is used for walking sticks. *Gigantochloa apus*, which flowers rarely, is much used for making rope. *G. atter* is used in the manufacturing of whistles. The palms, *Daemonorops draco*, *D. draconcellus*, *D. didymophyllus*, and *D. ascendens* are used in the making of a red dye. Gutta percha is produced by *Palaequium gutta*, *P. oblongifolium*, *P. borneense* and *Payenne leerii*. The fruits of *Terminalia belerica* var. *laurinoides* and *T. teysmannii* are used for tanning.—*J. C. Th. Uphof*.

7037. PARKER, R. N. Eucalyptus in the plains of northwest India. *India Forest Bull.* (Econ. Serv.) 61. 1-34. Calcutta, 1925.—Eucalypts suitable for planting for both forest and ornamental purposes are listed and instructions are given for raising the trees from seed. Information is also given on rate of growth of several species. The results of various trials of 107 Eucalyptus species are briefly described.—*E. N. Munns*.

7038. PATWARDHAN, K. N. My experience in lac-cultivation in Sangli State Forests near Belgaum. *Poona Agric. Coll. Mag.* 17: 147-149. 1925.—From preliminary experimental results the author believes there is every chance of success for the cultivation of lac.—*Frederick V. Rand*.

7039. PAUL, BENSON H. The influence of growth conditions upon the properties of wood. *Jour. Forest.* 22: 707-723. 4 fig. 1924.

7040. PAVARI, ALDO. Gli Eucalipti. [The Eucalypts.] *Federazione pro Montibus Bul.* 1³: 1-44. 20 fig. Rome, 1922.—A description is given of the more commonly planted species of *Eucalyptus* which hold promise for further planting in Italy, particularly *E. globulus*, *E. rostrata*, *E. resinifera*, *E. corynocalyx*, *E. tereticornis*, and *E. robusta*. Directions for raising the trees are given, with notes on the products.—*E. N. Munns*.

7041. PAVARI, ALDO. Relazione sulla attività della Stazione Sperimentale di Selvicoltura dal 15 aprile 1922 al 30 giugno 1923. [Report of the Forest Experiment Station for the period April 15, 1922, to June 30, 1923.] (Reprint from *Annali R. Ist. Superiore Forest, Nazionale*.) 20 p. M. Ricci: Firenze, 1923.—The station was established in 1922. The following studies were undertaken: (1) A comparative study of reforestation already accomplished or begun in Italy, especially in the Basilicata, in the central Appennines, and in Sardinia; (2) experimental cultivation of eucalypts and Australian acacias in the Mediterranean chapanal zone; (3) the improvement of low-yielding coppice stands in the sub-alpine and alpine zones, particularly by planting conifers; (4) the introduction of various exotics; (5) use of fertilizers in reforestation; (6) a monograph on cypress (*Cupressus*) in Tuscany; (7) treatment of the wood of *Quercus cerris* to make it suitable for staves and furniture. Some work is done in cooperation with private owners and communes.—*W. N. Sparhawk*.

7042. PAVARI, ALDO. Relazione sulla attività della Stazione Sperimentale di Selvicoltura dal 1 luglio 1923 al 30 giugno 1924. [Report of the Forest Experiment Station for the period July 1, 1923, to June 30, 1924.] 14 p. M. Ricci: Firenze. 1925.—The studies described in the previous report were continued. (See preceding Entry.) The number of experimental plantations of exotics was increased from 32 to 56, in addition to numerous plantations made by or in cooperation with local bodies and individuals. About 100,000 plants and 180 kgm. of seed of exotic species were distributed. The city of Turin, with the help of the Station, is developing a 30 ha. arboretum in connection with its memorial park. Studies of the growth and physical properties of Douglas fir wood indicate that it is deserving of wide cultivation in the central Appennines.—*W. N. Sparhawk*.

7043. PEIRSON, H. B., AND A. J. JAENICKE. The place of entomology in silviculture. *Jour. Forest.* 23: 372-377. 1925.

7044. PEMBERTON, J. E., JR. The relation of bark to diameter and volume in redwood [*Sequoia sempervirens*]. *Jour. Forest.* 22: 44-48. 1 fig. 1924.

7045. PERRY, GEORGE S. Lessons from Swedish forestry for America. *Jour. Forest.* 23: 513-517. 1925.

7046. PERRY, GEO. S. Some developments in Pennsylvania forest nursery practice. *Jour. Forest.* 22: 546-552. 1924.

7047. PERRY, GEO. S. The solution of some forest nursery problems. Jour. Forest. 21: 177-179. 1923.—Larvae of May beetles (*Lochnosterna* spp.) have been controlled in white pine and Norway spruce seed beds at Mont Alto Pennsylvania, by the use of white ash seedlings as "decoy trees." Drill sowing has been abandoned for broadcasting for all common hardwoods, since the latter saves seed and space and gives better stock. The author describes successful handling of tulip poplar in the nursery.—*Philip C. Wakeley.*

7048. PERRY, W. J. The spruce budworm in New Mexico. Jour. Forest. 23: 410-413. 1925.

7049. PETRINI, SVEN. Svenska skogsvårdsföreningens exkursion till Västmanland år 1924. [The Swedish Forestry Association's excursion to the province of Västmanland in 1924.] Skogsvårdsför. Tidskr. 23: 349-480. 21 fig. 1925.—The iron-mining region of central Sweden was visited on this annual excursion. Due to the demands made for charcoal for the foundries, Scotch pine stands in this section have been clear-cut for centuries, resulting in thick, even-aged stands. Former overcutting has left the greater part of the forest in the middle-aged classes (averaging about 60-80 years), so that thinnings now comprise the bulk of all cutting in order to build up the older age classes. A large part of the discussion during the excursion was taken up with questions of thinning and methods of reproduction to be applied at the final cutting.—*Henry I. Baldwin.*

7050. PETRINI, SVEN. Tillväxtprocentens Beräkande. [The calculation of growth percent.] Meddel. Statens Skogsförsöksanstalt 22: 145-168. 2 fig. 1925.—In a survey of the various methods in use for determining the growth percent, Petrini points out some sources of error frequently neglected. One is that while growth is laid down on the woody cylinder beneath the bark, measurements are usually made outside the bark. This may give a result more than 1% below actuality. The only accurate method of calculating percent of increment is by a weighted average of each year's growth during the period studied, the weights being the value of the forest capital (volume) for each year. Compared to this, Pressler's formula gives too low a result, but by computing the percent by the usual method for compound interest a nearer result is obtained except when the growth is decreasing during the period. Compound interest is really a logical method for studying tree growth, since each year's growth is added to that of the previous year. In advocating the use of compound interest tables as an improvement over Pressler's formula the author points out the comparatively slight error incurred if simple interest is used for quick approximation. In virgin forests, or wherever growth is declining during the period, the compound interest method is less accurate than Pressler's formula.—*Henry I. Baldwin.*

7051. PETRINI, SVEN. [Rev. of: KNUCHEL, HERMANN. Ein neuer Höhenmesser. (A new hypsometer.) Schweiz. Zeitschr. Forstw. 76: 273-279. 1925.] Skogsvårdsför. Tidskr. 23: X340. 1925.—Büchi's hypsometer, based on Hüni's principle but lighter and easier to handle, is capable of the measurement of tree height to within 0.5% accuracy, comparable to trigonometric determination by theodolite.—*Henry I. Baldwin.*

7052. PETRINI, SVEN. [Rev. of: VON SEUTTER, UND PH. FLURY. Dürsrüti. (The forest of Mt. Dürsrüti.) Schweiz. Zeitschr. Forstw. 76¹¹: 1925.] Skogsvårdsför. Tidskr. 23: X339-X340. 1925.—The Swiss Forestry Assoc. visited the forest near Mt. Dürsrüti on its annual excursion, and studied the growth of the enormous trees in this spruce selection forest.—*Henry I. Baldwin.*

7053. PFLANZER, B. Strassenbepflanzung. [Street planting.] Mitteil. Deutsch. Dendrol. Ges. 35: 124-126. 1925.

7054. POOLE, C. E. LANE. Western Australia as a producer of fine timber. Empire Forestry 1: 35-46. 1 pl. 1922.—Some of the world's finest hardwood timber grows in Western Australia. The forest area is about 3 million acres which has been badly depleted by fire and cutting. Most of the virgin area is now held by sawmill companies.—*E. N. Munns.*

7055. POSKIN, A. Production du bois et traitement des forêts. [The production of wood and the treatment of forests.] Bull. Soc. Centrale Forest. Belgique 31: 479-491. 1924.—Intensive forest production is a great need of Belgium. The local production of wood is now only 29% of the consumption. The kinds and sizes of wood most used in Belgium and some possible methods of increasing wood production are outlined. It is not so much methods

which are required as it is the putting into more general use of known methods. The choice of species is important. Certain species give greatest yield per ha. but other species are more valuable and more needed in Belgium. Tables show the yields per ha. and the mean annual growth for spruce, pine, and beech. The importance of growing resinous species for large sizes is stressed, as is that of using locally grown seed or that from a region of similar climate. (To be continued.)—*H. T. Gisborne.*

7056. POSKIN, A. Production du bois et traitement des forêts. [The production of wood and the treatment of forests.] Bull. Soc. Centrale Forest. Belgique 31: 535-547. 2 fig. 1924.—In this issue the author discusses the various methods of handling the forests, under the following heads: High forest, with a table showing ownership and acreage by timber types in 1880, 1895, and 1910; Simple coppice; and Coppice with standards.—*H. T. Gisborne.*

7057. PRESTON, JOHN F. Control of bark beetles on the national forests. Jour. Forest. 23: 49-61. 1925.

7058. PRESTON, JOHN F., AND I. F. ELDRIDGE. Building a management plan. Jour. Forest. 22: 119-127. 1924.

7059. PRESTON, JOHN F., AND I. F. ELDRIDGE. High spots of modern management plans for the national forests. Jour. Forest. 21: 116-124. 1923.—Holding that the failure of many national forest management plans so far made is the result of blind imitation of the complex, elaborate, intensive plans designed for smaller and less primitive European forests, the authors discuss the general principles of plans fitted to present national forest conditions.—*Philip C. Wakeley.*

7060. PRESTON, JOHN F., AND R. C. HAWLEY. Silvicultural practice in the United States during the past quarter century. Jour. Forest. 23: 236-250. 1925.

7061. PRICE, JAY H. Relation of the quality of lumber produced to the percentage of the stand cut. Jour. Forest. 22: 894-901. 4 fig. 1924.

7062. PULLING, ALBERT V. S. Small rodents and northeastern conifers. Jour. Forest. 22: 813-814. 1924.

7063. R., E. À propos de pyrale et de pin de Corse en Campine. [The tip moth and Corsican pine in Campine.] Bull. Soc. Centrale Forest. Belgique 31: 447-452. 1 fig. 1924.—The ravages of the tip moth in stands 4-15 year-old Corsican pine are described. The methods of control, according to Severin, are quoted, and the author recommends regeneration by artificial sowing, and care in the source of seed.—*H. T. Gisborne.*

7064. R., E. En Campine. [In Campine.] Bull. Soc. Centrale Forest. Belgique 31: 607-611. 1924.—This is a brief description of the forests and forestry of the Campine region of Belgium.—*H. T. Gisborne.*

7065. R., E. Le contrôle de l'origine des graines de pin sylvestre. [Controlling the source of Scotch pine seed.] Bull. Soc. Centrale Forest. Belgique 31: 393-400. 1924.—Seed from Scotch pines grown in the region of Campine have been found to be by far the best for future planting in Belgium. The method of bonding seed collectors and nursery-men is described.—*H. T. Gisborne.*

7066. RAVE. Über starke Durchforstungen und ihre Kontrolle. [Heavy thinnings and their control.] Zeitschr. Forst.- u. Jagdw. 56: 726-730. 1924.—Forest management is not only more profitable where heavy (as contrasted with light) thinning operations are conducted but the net yielding capacity of the soil is kept at its highest point with extension of the rotation period. During periods of stringent economic necessity, a more extensive employment of the open stand system of management and regulation by volume rather than by area is recommended. The method of calculating excess and reduced cutting under the volume system in setting up the management plan is described and illustrated.—*J. Roeser, Jr.*

7067. REBEL. Das Luftbild im Dienste der Forsteinrichtung. [The aerial photograph in the service of forest management.] Zeitschr. Forst.- u. Jagdw. 57: 506-507. 1925.—A protest against Krutsch's report in the Tharandt Forestry Yearbook in which the employment of aeroplane photographs for forest management use in Saxony, even on level terrain, is criticized. The author is convinced of the practicality of this method, through actual use.—*J. Roeser, Jr.*

7068. REBEL. Forstliche Notwendigkeiten. [Forest necessities.] Zeitschr. Forst.- u.

Jagdw. 56: 716-725. 1924.—The 2 enemies of forest management in Bavaria are soil retrogression due in part to the general practice of heavily thinning the understory and making improper regeneration openings, and hybridization by undesirable foreign and local varieties. The remedy lies in soil preparation, which is possible by machinery on 30-35% of the State forests, in order to remove the prevailing destructive soil flora, to reduce drought damage and to get rid of *Lophodermia pinastri*. Regeneration should be secured under shelter and before the shelter is removed. Efforts against the development of inferior varieties by raising desirable local strains based on the principles outlined by Koenig, are under way.—*J. Roeser, Jr.*

7069. RECKNAGEL, A. B. Notes on growth of red spruce [*Picea rubens*] in Franklin County, Maine. Jour. Forest. 22: 810-811. 1924.

7070. RECORD, SAMUEL J. Tropical forestry in Yale University. Pan American Union Forest. Circ. 6. 1-4. 1925.

7071. REED, C. A. Glimpses of economic trees and plants of China. Jour. Forest. 22: 540-541. 1924.

7072. REINEKE, L. H. A test of taper tables. Jour. Forest. 23: 945-947. 1925.

7073. RENDALL, RAYMOND E. Bates forest. Acquisition by Bates College and first steps in management. Jour. Forest. 21: 162-172. 1923.—The author describes the preliminaries of forest management on several thousand acres of timberland in York, Cumberland, and Androscoggin Counties, Maine. The forest is to be run as a demonstration of successful sustained yield management.—*Philip C. Wakeley.*

7074. RHODES, R. HEATON, AND L. MACINTOSH ELLIS. Forests and forestry in New Zealand. 36 p., 8 pl. Wellington, 1923.—Area, ownership, and growth of the various forests are given, the types are briefly described, and the manner of exploitation, utilization, and markets for various products indicated. The important timbers are *Agathis australis*, *Podocarpus totara*, *P. dactyloides*, *P. spicatus*, *P. ferrugineus*, *Dacrydium cupressinum*, *Nothofagus fusca*, *N. menziesii*, *Beilschmiedia tawa*, *B. tarairi*, *Metrosideros robusta*, *Elaeocarpus dentatus*, *Olea cunninghamii*.—*E. N. Munns.*

7075. RICCI, UMBERTO. Renseignements de statistiques forestières relatifs à quelques pays. [Compilation of forest statistics relative to some countries.] 120 p. Internat. Inst. Agric.: Rome, 1922.

7076. RICHARDS, EDWARD. A study of the growth of spruce and balsam pulpwood on cut-over ridge land in Lewis County, New York. Jour. Forest. 23: 20-29. 1925.

7077. RICHARDSON, ARTHUR H. Gathering and extracting red pine seed [*Pinus resinosa*]. Jour. Forest. 23: 304-310. 1925.

7078. RIEBEL. [Rev. of: SCHILLING, L. Betriebs- und Ertragsregelung im Hoch- und Niederwalde. (Management and yield regulation in high forest and coppice.) 147 p. 47 fig., map. J. Neumann: Neudamm, 1924.] Centralbl. Gesam. Forstw. 51: 290-291. 1925.

7079. RIEPPI, A. Il problema forestale in rapporto con la scuola. [The forest problem in its relation to the school.] Atti del IV° Congresso Forestale Italiano 1921. P. 120-123. Udine, Italy, 1923.

7080. ROBERTSON, C. C. The forests of South Africa. 23 p. Forest Dept.: Pretoria, undated [1924?].—Indigenous timber forests cover about 778,000 acres, low scrub forests 500,000 acres, and 558,000 acres of exotic species have been planted, making a total forest area (excluding savannah) equal to 0.5% of the land surface. There are several hundred native species of trees. The forests of the different regions are described, and the history of forestry in the Union and the activities of the Forest Department are outlined.—The wattle industry has been built up almost entirely by private enterprise, with an aggregate of some 300,000 acres planted since 1880, and a current production of bark and tanning extract valued at nearly £1,000,000 a year.—*W. N. Sparhawk.*

7081. ROESER, JACOB, JR. Bookkeeping in forest management. Jour. Forest. 23: 991-996. 1925.

7082. ROGER, A. Research in forestry in India. Empire Forest. Jour. 4: 45-53. 1925.

7083. ROMELL, LARS-GUNNAR. Växttidsundersökningar å tall och gran. [Investigations of the growing periods of pine and spruce.] Meddel. Statens Skogsförsöksanst. 22: 45-124. 30 fig. 1925.—The rate of height growth during the growing season for *Pinus sylvestris* and

Picea excelsa varies in different parts of Sweden and in stands of different densities. Investigations were carried on during the growing seasons at 10 stations in typical forest areas from southern to northern Sweden (1920-1923). Pine growth starts on an average of 16 days earlier than spruce growth, varying from 8 days earlier in the north up to 36 days earlier in the south. The duration of growth in pine averages 6 days longer than in spruce. For all stations the total growth is greater in pine than in spruce. The duration of growth for pine averaged 48 days, with 61 as the maximum; spruce growth lasted 42 days, with a maximum of 50 days. For both species, the longest period of growth was at the northernmost stations. Weekly height growth measurements showed a definite relationship between height growth and temperature, but there was no definite relationship between the seasonal temperature and the total season's growth. Diameter measurements during the growing seasons of 1921, 1922, and 1923. Growth on thinned plots commenced earlier by a few days than on unthinned plots, and the duration of growth showed only a slightly longer period on the thinned plots. Growth commenced June 4 to June 9 and lasted from 76 to 80 days each season. The number of cell layers formed annually was 18.5 to 40; 36.3 and 40 on the thinned plots, and 18.3 and 18.9 on the unthinned plots. Diameter growth in 1921 and 1922 commenced only a few days later than the commencement of height growth on trees under observation at the same station; however, in 1923 it was 2 weeks later. The length of the growing period for diameter growth for these 3 years varies much more than the period of height growth in the same locality.—*E. J. Hanzlik*.

7084. ROOP, WENDALL PRESCOTT. *Teak: its habitat, exploitation and marketing*. U. S. Navy Dept. Bureau Construction and Repair Tech. Bull. 125. 1-37. 12 fig. 1925.—Grading rules are given and defects illustrated.—*E. N. Munns*.

7085. ROTH, UND WATSON. *Stammgrundflächen des Urwaldes*. [Stem basal areas of virgin forests.] *Zeitschr. Forst.- u. Jagdw.* 57: 567-569. 1925.—A report by Schwappach of measurements made by Watson in 1924 in preparing a working plan for an area near Green Bay, Wisconsin. A 10% cruise gave an average volume of 5004 cu. feet per acre, with an average basal area of 119.8 sq. feet. A "natural" rotation of 180 years for both pine and the mixed stands of hemlock, maple and birch is indicated, considering 17.7 inches as the maximum diameter. On a Michigan peninsula area an average basal area of 92.4 sq. feet per acre was found; with an average volume of about 2859 cu. feet.—*J. Roeser, Jr.*

7086. RUFFI, M. *Rapport de prospection forestière dans la vallée de la Tshopo*. [Report on a forest survey of the Tshopo Valley.] *Bull. Agric. Congo Belge* 15: 429-442. 1924.

7087. RUŠNOV, P. *Der Heizwert der verschiedenen Holzarten*. [Heating value of various woods.] *Centralbl. Gesam. Forstw.* 50: 376-378. 1924.

7088. RUŠNOV, P. *Warum werden Laubholzer in der Zelluloseindustrie meist nicht verwendet?* [Why are broad-leaved trees used so little for pulp?] *Centralbl. Gesam. Forstw.* 50: 379-380. 1924.

7089. RŮŽIČKA, JAROSLAV. *Die neueste Erfahrungen über die Nonne in Böhmen*. [Latest experiences with the nun moth in Bohemia.] *Centralbl. Gesam. Forstw.* 50: 33-67, 159-185, 313-335. 7 fig. 1924.—This paper includes an account of the biology of the insect, its natural enemies, means of combating epidemics, means of preventing epidemics by silvicultural measures, and methods of reforesting defoliated areas.—*W. N. Sparhawk*.

7090. SAMPSON, ARTHUR W., AND JAMES T. JARDINE. *Range management and forestry*. *Jour. Forest.* 23: 476-486. 1925.

7091. SARGOS, R. *La conservation des bois coloniaux*. [The use of colonial woods.] *Rev. Bot. Appl. et Agric. Coloniale* 5: 343-348. 1925.

7092. SAUR, H. *Reboisements en Sardaigne*. [Reforestation in Sardinia.] *Bull. Trimest. Soc. Forest. Franche Comté et Provinces Est* 16: 180-199. 1925.—Forests or chestnut groves cover 1100 sq. km. or 4.8% of the area of Sardinia. Climatic and soil conditions and human influences, particularly grazing animals and fires, are described as they affect reforestation. Early plantings were attempted with *Quercus suber*, *Q. Ilex*, *Q. sessiliflora*, *Pinus pinaster*, and *P. pinea*. Planting both in seed spots and in plots cultivated to depths of 50-60 cm. was tried and failed. Success has been attained by sowing broadcast 5 hectoliters of acorns to the ha. on the brush-covered areas, after which the soil is loosened to a depth

of 5 cm. at the same time burying the acorns and uprooting the brush which is then piled and burned. Each year for 3 years after planting, the seedlings must be released from the competition of the brush which sprouts. Experimental plots planted by different methods and with and without fertilizer confirm this method as best. Deep cultivation is unfavorable because it exposes the soil to sun and wind and interferes with capillarity. Bacterial counts on the different plots showed the least in the deeply cultivated soil. The new method is only $\frac{1}{2}$ as expensive as the old; it eliminates damage by grazing and fires.—*J. Kittredge, Jr.*

7093. SCHAEFFER, A. *Technique de coupes d'amélioration*. [Technique of improvement cuttings.] Bull. Trimest. Soc. Forest. Franche Comté et Provinces Est 16: 199–202. 1925.—In improvement cuttings, there are many special cases for each of which an adequate solution adapted to the particular conditions must be found. This theme is illustrated by examples from the region of Lure. In essence the method means frequent light cuttings so that mature trees are harvested and regeneration is established currently.—*J. Kittredge, Jr.*

7094. SCHAEFFER, L. *Voyage d'étude en Corse de la Société Forestière de Franche-Comté. Compte rendu de tournée du 2e groupe*. [Study trip of the Forest Society of Franche-Comté in Corsica. Account of the trip of the second section.] Bull. Trimest. Soc. Forest. Franche-Comté et Provinces Est 16: 135–179. 6 pl., 2 fig. 1925.—The account includes description of the altitudinal zones of vegetation, by types and species, uses and habits of the principal species, namely, cork oak (*Quercus suber*), live oak, brush, maritime pine (*Pinus maritima*), *P. laricio*, beech, fir, and birch. The 2 most difficult problems for the forester are fires and over-grazing. Of the 877,000 ha. of land surface, 15% is forested, 40% brush-covered and 5% occupied by chestnut orchards. Tables show areas, altitudes, geological formation, climatic conditions, and percentages of tree species by forests, together with management and sales data.—*J. Kittredge, Jr.*

7095. SCHENCK, C. A. *Forestry in Finland*. Jour. Forest. 23: 968–976. 1925.

7096. SCHILLING, L. *Ostpreussische Kiefern-Fichtenmischbestände*. [East Prussian mixed pine-spruce stands.] Zeitschr. Forst.- u. Jagdw. 57: 257–296. 2 pl. 1925.—Delayed by various influences, the second remeasurement of Schwappach's 1905–1907 sample plots shows that the individual increment of pine and spruce in mixture is greater than that of either species when growing pure. The mixture is desirable as it permanently increases the increment of such stands, although not for short rotations. The mixed stands show 2% volume increment at 140 years, indicating an inherently healthier condition than mature pure pine stands. Fifteen tables are presented.—*J. Roeser, Jr.*

7097. SCHMIDT, FR. *Nachrichten von der Oberförsterei Pölsfeld* (Reg. = Bez. Merseburg). [Notes on the Pölsfeld forest.] Zeitschr. Forst.- u. Jagdw. 57: 48–55. 1925.

7098. SCHMIED. [Rev. of: LUNDH, ERIK. *Den å Böda Kronopark utförda grönkirstningen av tall*. (Pruning pine in the Böda State forest.) (With German summary.) Meddel. Statens Skogsforsöksanst. 21: 49–100. 23 fig. 1924.] Centralbl. Gesam. Forstw. 51: 277–280. 1925.—It is concluded that properly established and tended pine stands need no pruning.—*W. N. Sparhawk.*

7099. SCHMIED, HERBERT. *Ein vergleichender Durchforstungsversuch an Douglastanne in den österreichischen Alpen*. [Thinning experiments in Douglas fir.] Centralbl. Gesam. Forstw. 50: 290–312. 1924.

7100. SCHREIBER. [Rev. of: FEUCHT, OTTO. *Der Wald und seine Bewirtschaftung*. (The forest and its management.) 4th ed. 225 p., 43 fig. Eugen Ulmar: Stuttgart, 1924 (?).] Centralbl. Gesam. Forstw. 50: 366–368. 1924.

7101. SCHREIBER. [Rev. of: HENRY, AUGUSTINE. *Manna of larch and of Douglas fir, melezitose and lethal honey*. Pharm. Jour., April, 1924.] Centralbl. Gesam. Forstw. 50: 380–385. 1924.

7102. SCHREIBER, M. *Waldbauliche Folgerungen aus Studien über die Variation des Blattcharakters unserer Holzarten*. [Silvicultural results of studies of leaf variation of trees.] Centralbl. Gesam. Forstw. 50: 116–153. 1924.—Variation in leaf characteristics of different individuals and races of *Picea excelsa* was studied.—*W. N. Sparhawk.*

7103. SCHUBERT, J. *Über die Anwendung der Mathematik in Natur- und Forstwissenschaft*. [The application of mathematics in natural science and forestry.] Zeitschr. Forst.- u.

Jagdw. 56: 643-649. 1924.—An academic discussion of the relation, importance and logical application of mathematics to various aspects of forestry.—*J. Roeser, Jr.*

7104. SCHULTZE, ERNST. Schwedens Holzwirtschaft und ihre weltwirtschaftliche Bedeutung. [Sweden's wood industry and its economic importance to the world.] Zeitschr. Forst.- u. Jagdw. 57: 753-763. 1925.—The wood industry ranks above all other Swedish industries in the value of export products, producing 50% of total exports in 1923. A distinctive feature of the forest industry is the protective feature in regard to reckless exploitation which has governed the management of forests since early days. The production of paper-pulp, much of which is exported, and charcoal utilizes most of the waste material resulting from logging and sawmill operations. As compared with most other lands, the distinguishing features which are pushing Sweden's wood to the fore in the world market are careful forest management and persistent application of advanced technical methods in converting wood into its products.—*J. Roeser, Jr.*

7105. SCHURZ, WILLIAM L., O. D. HARGIS, C. F. MARBUT, AND C. B. MANIFOLD. Rubber production in the Amazon Valley. U. S. Dept. of Commerce Trade Promotion Ser. 23: 1-369. 45 fig., 2 maps. 1925.—“This report represents the result of an investigation made by a special field party in the Amazon Valley during the period from August 1, 1923, to May 13, 1924. . . . The report will be divided into two parts, the first of which will serve mainly as a résumé and comparison of the data contained in the regional reports that form the second part. . . . The area covered comprehends that part of the Amazon drainage basin in which rubber is native or where natural conditions would permit of its cultivation.”—The main subjects discussed in part I are: History of the Amazon rubber industry; present state of native (wild) rubber industry; possibilities of plantation development; Amazon Valley and Middle East compared; and other industries and resources.—The regional reports in part II cover the islands and Para; Lower Amazon, South; Lower Amazon, North; Upper Amazon, North; Madeira; Upper Amazon, South; Acre; Bolivia; and Peru, Ecuador, and Colombia.—Bibliographies cover the following: Brazil, Colombia, Peru and General.—*Frederick V. Rand.*

7106. SCHUSTLER, FRANTISEK. Le problème de l'équivalence des groupements végétaux à la limite supérieure de la forêt dans les montagnes de l'Europe Centrale. [The problem of equalizing vegetation groups at the upper limits of forest in the mountains of Central Europe.] Veröffentlichungen Geobot. Instit. Rubel Zurich 1: 289-299. 1924.

7107. SCHWALBE, CARL G. Das 12-jährige Bestehen der Versuchsstation für Holz- und Zellstoffchemie zu Eberswalde. [The 12th year of existence of the Wood and Cellulose Chemistry Experiment Station at Eberswalde.] Zeitschr. Forst.- u. Jagdw. 57: 513-530. 1925.—A general description of the station, with discussion of the place of forest-chemical technology in forest utilization, the necessity for a wood and products institute; the importance of the station to forest administration, and a résumé of the results of resin, wood, cellulose and carbonization studies at Eberswalde. The station is small, personnel and funds are decidedly limited and the attitude of foresters is antagonistic.—*J. Roeser, Jr.*

7108. SCHWAPPACH. Die Ermittlung des laufendjährigen Zuwachses auf Versuchsflächen und bei der Forsteinrichtung. [Determination of current annual increment on sample plots and in forest regulation.] Zeitschr. Forst.- u. Jagdw. 57: 351-357. 1925.—The methods of determining volume and current annual increment by means of sample plot and extensive experimental area measurements are compared, and the methods employed by Biolley and Eichhorn described. The difficulty of selecting large uniformly typical areas, and the amount of labor involved determine the size of the area to be measured. For scientific work, 1 ha. should be considered as the upper limit for reliable results; in forest organization work, the upper limit, depending upon local conditions, should not exceed 100-200 ha. for any working group.—*J. Roeser, Jr.*

7109. SCHWAPPACH. Die geplante Reform der österreichischen Bundesforstverwaltung. [The contemplated reform of the Austrian State Forest Administration.] Zeitschr. Forst.- u. Jagdw. 57: 303-306. 1925.—The Austrian State forests, unlike those of Germany, have suffered of late a continuous reduction in the growing stock, due primarily to extraordinary “rights” granted forest users, destructive calamities, and to bureaucratic administration.

Since the contemplated reform planned under the direction of the League of Nations involves commercialization, the foresters have voiced their protest.—*J. Roeser, Jr.*

7110. SCHWAPPACH. *Die Waldungen Finnlands*. [The forests of Finland.] *Zeitschr. Forst.- u. Jagdw.* 57: 374-379. 1925.

7111. SEAMAN, L. N., AND R. S. PEARSON. *Timber testing in India*. *Empire Forest.* 1: 47-51. 1922.

7112. SEDLACZEK, W. *Zum 50-jährigen Bestehen der Forstlichen Versuchsanstalt in Mariabrunn*. [Fifty years of the Forest Research Institute at Mariabrunn.] *Centralbl. Gesam. Forstw.* 50: 195-201. 1924.

7113. SEITNER. *Lonchaea viridana* Meig. *Ein Tannenzapfen- und Samenschädling*. [An enemy of fir cones and seed.] *Centralbl. Gesam. Forstw.* 51: 159-161. 1925.—The larvae of this small fly do considerable damage to fir seed in the cones.—*W. N. Sparhawk.*

7114. SEITNER. [Rev. of: ESCHERICH, K. *Die Forstinsekten Mitteleuropas*. (Forest insects of central Europe.) II Bd. Erste Abt. 335 fig. Paul Parey: Berlin, 1923 (?).] *Centralbl. Gesam. Forstw.* 50: 72-78. 1924.

7115. SEITNER. [Rev. of: WIMMER, EMIL. *Die Lehre vom Forstschutz*. (Forest protection.) 8th ed., 303 p. Paul Parey: Berlin, 1924 (?).] *Centralbl. Gesam. Forstw.* 51: 132-133. 1925.

7116. SEITNER. [Rev. of: WOLF, MAX, UND ANTON KRAUSSE. *Die Krankheiten der Forleule und ihre prognostische Bedeutung für die Praxis*. (Diseases of the pine owl moth.) 102 p. W. G. Korn: Breslau, 1925.] *Centralbl. Gesam. Forstw.* 51: 287-288. 1925.

7117. SERPIERI, A. *Lo Stato, gli altri Enti e i privati nell'attività forestale*. [Forestry activities of the State, other public bodies, and private owners.] *Atti del IV° Congresso Forestale Italiano*, 1921. P. 35-68. Udine, Italy, 1923.

7118. SEVERI, N. *Conservazione di alberature e parchi nelle città*. [Conservation of the tree in the city parks.] *Atti del IV° Congresso Forestale Italiano*, 1921. P. 100-102. Udine, Italy, 1923.

7119. SHIPLEY, ARTHUR. *The cocoa tree*. *Jour. Cambridge Univ. Forest Assoc.* 2³: 10-11. 1925.—The tree (*Theobroma cacao*) and the extraction of the seed are described. Cocoa from plantations in Nigeria and the Gold Coast threatens to be a serious rival of the West Indian product.—*W. N. Sparhawk.*

7120. SHOSTAKOVITCH, V. B. *Forest conflagrations in Siberia*. (Translated by TOLMACHOFF.) *Jour. Forest.* 23: 365-371. 1925.

7121. SHOW, S. B. *Yield capacities of the pure yellow pine type on the east slope of the Sierra Nevada Mountains in California*. *Jour. Agric. Res.* 31: 1121-1135. 1 fig. 1925.—Measurement of the wood produced on 132 sample areas of fully stocked western yellow pine (*Pinus ponderosa*) showed that the average annual growth ranges from 160 to 620 board feet, depending on the quality of the forest soil. The best rotation on which to raise saw timber is 120 years. Pure stands of white fir (*Abies concolor*) produce about 35-40% more wood on a given site than yellow pine.—*Author.*

7122. SICHICH, V. *Le pinete del Carso e la loro conversione in boschi misti di conifere e latifoglie*. [The Corsican pine forests and their conversion into mixed conifer and hardwoods.] *Atti del IV° Congresso Forestale Italiano*, 1921. P. 241-245. Udine, Italy, 1923.

7123. SIMMONS, J. R. *Angular submerged tree planting*. *Jour. Forest.* 22: 19-21 [600-602]. 1924.

7124. SINGER, JOSEF. *Die Berechnung des Normalvorrates nach der näherungsweise abgeleiteten Formel $V_n = \frac{u}{4} (m_u + 2\frac{m_u}{2})$* [Computing the normal stock.] *Centralbl. Gesam. Forstw.* 50: 340-347. 1 fig. 1924.

7125. [SKOROBOGATYI, A. F.] *Скоробогатый, А. Ф. Новые культуры в Крыму*. [The new cultures of the Crimean peninsula.] (English summary.) *Труды Прикл. Бот. и Селекции*. [Bull. Appl. Bot. & Plantbreed.] 14⁴: 227-246. 1924-1925 [1925].—A great majority of the forest trees introduced into Crimea can be found growing in the Nikitsky Botanical Garden founded in 1812.—*M. Demerec.*

7126. SKUCE, THOMAS W. *West Virginia forests and forestry*. *Jour. Forest.* 23: 654-661 1925.

7127. SMYTHIES, E. A. **India's forest wealth.** 2nd ed., xv + 137 p., 12 pl. Humphrey Milford, Oxford Univ. Press: London, 1925.

7128. SMYTHIES, E. A. **The French 1883 method. A generalized modification.** Jour. Forest. 23: 997-1001. 2 fig. 1925.

7129. SOCIETY OF AMERICAN FORESTERS. SPARHAWK, W. N., AND OTHERS. **Classification of forest sites.** Jour. Forest. 21: 139-147. 1923.—The committee recommends the adoption of a standard method of classifying forest sites, based on actual mean annual growth in cubic volume, and of a form of yield table to match. Details of the proposed methods are given.—*Philip C. Wakeley.*

7130. SOCIETY OF AMERICAN FORESTERS. KORSTIAN, C. F., AND OTHERS. **An outline for the classification of forestry literature.** Jour. Forest. 21: 148-161. 1923.—The committee presents a decimal outline for the classification of forestry literature. The outline is expanded in some detail under the 10 main heads of general forestry.—*Philip C. Wakeley.*

7131. SPARHAWK, W. N. **Why the United States is interested in Latin American forest development.** Pan American Union Forest. Circ. 4. 1-8. 1925.

7132. STASSEN, UND BEHRISCH. **Über Aufforstungen von Kalköderland, insbesondere in Bezug auf die Weisserle und Schwarzkiefer in der Klosteroberförsterei Göttingen.** [The forestation of barren calcareous soils, especially in relation to gray alder (*A. incana*) and Austrian pine (*P. austriaca*) in the monastic forest range of Göttingen.] Zeitschr. Forst.- u. Jagdw. 57: 483-494. 1925.—The sites, soil and stands in each district are described and a detailed analysis of the soil which is derived from the underlying shell limestone is given. Gray alder has not been found a reliable forestation species on desiccated, shallow soils derived from the lower shell limestone except when mixed with spruce and pine. It prefers the fresher sites where it puts on appreciably better height and volume growth. It is the only tree free from *Melolontha vulgaris*. Under gray alder the absolute humus content exceeds appreciably the quantity of humus in the upper pine soil strata. The probable reason for the species' high intrinsic value on lime soils is its tendency to increase the nitrogen content of the soil. Under the tree, the top soil layer has almost twice the nitrogen content found in comparable Austrian pine soils, and the sub-soil is also rich in nitrogen.—*J. Roesser, Jr.*

7133. STEWART, GILBERT. **Forest types of the northern swamps [Michigan].** Jour. Forest 23: 160-172. 1 fig. 1925.

7134. STICKEL, PAUL W., AND R. C. HAWLEY. **Comparative basal areas.** Jour. Forest. 22: 302-305. 1924.

7135. STICKEL, PAUL W., AND RALPH C. HAWLEY. **The grazing of cattle and horses in pine plantations.** Jour. Forest. 22: 846-860; 23: 389-391. 1924.

7136. STORY, FRASER. **Softwood resources of Europe.** Empire Forest. Jour. 2: 218-227. 1922.

7137. STOUTJESDYK, J. A. J. H. **Vergelyking tusschen Engelsche Indische en Nederlandsch Indische opbrengstgegevens van den Djati (*Tectona grandis* L.f.).** [A comparison of British and Dutch Indian yield-tables for teak. (*Tectona grandis*.)] (English summary.) Tectona 18: 1043-1075. 1 fig. 1925.—Bourne's yield table for teak of the region of Nilambur was compared with that of Beekman for the teak region of Java, complemented with newer data and leaving out of account the less accurate measurements. The resulting curves of the height-increment agreed very well with the trend of the Nilambur curves for mean-height, so that there is no essential difference between the height increment of teak in Java and at Nilambur. The volume of the total yield (thinning added to major yield) showed only small differences, the data for total increment being for Nilambur generally somewhat higher than for Java.—*Ch. Coster.*

7138. STUBENRAUCH. **Forstliche Plauderei II. Kalamitäten im Kiefernwalde.** [Forest gossip. II. Enemies of pine (*Pinus silvestris*) forests.] Zeitschr. Forst.- u. Jagdw. 56: 545-549. 1924.—The worst enemies of pine forests on diluvial soils are fire and insects. Of the latter, *Liparis monacha*, *Bombyx*, loopers (Geometridae) and *Noctua* rank first in importance. Combat measures involving these insects demand first a systematic trial sampling of designated areas to determine the severity of the infestation and then proper organization of personnel and cooperating agents and determination of best time to remove the litter from the forest floor. A sample formula for determining character of infestation is given. Statis-

tics are included showing the natural occurrence of these insects in different years and in stands of various age classes.—*J. Roeser, Jr.*

7139. SWAIN, E. H. F. Forestry in Queensland. *Empire Forest. Jour.* 3: 180-189. 1924.

7140. SWART. Rationelle Laubholzzucht im Küstenclima. [Rational hardwood culture in the coastal climate.] *Zeitschr. Forst.- u. Jagdw.* 57: 712-731. 1925.—The mechanical employment of even-aged dense pure beech stands with light thinnings and a long rotation (in the moist climate of the Hither Pomeranian Coast) results in stand and soil deterioration. Such soil deterioration can not be cured by the systematic application of any cultural methods. A combination system, termed "Überholtsaumverfahren" (strip system with reserves) is recommended. It permits the working out of the continuous forest idea to the fullest extent, satisfies the principles of management by protecting and retaining the natural conditions essential to best growth, and satisfies economic principles by increasing net yield and revenue through complete utilization of soil and stand capital with reduction of production costs.—*J. Roeser, Jr.*

7141. SWENNING, KARL A. Management studies on cottonwood and silver maple [*Populus deltoides* and *Acer saccharinum*]. *Jour. Forest.* 22: 178-183. 1924.

7142. TAS, LEONARD. Vegetatieve vermenigvuldiging bij *Hevea brasiliensis*. [Vegetative reproduction of *Hevea brasiliensis*.] 33 p. G. Kolff & Co.: Batavia, 1921.

7143. TAYLOR, W. L. Direct sowing of conifer seed. *Empire Forest. Jour.* 4: 106-110. 1 pl. 1925.—Success has attended direct sowing of maritime and Scotch pines on barren sandy soil in southern England.—*E. N. Munns.*

7144. TEAR, F. J. Sand dune reclamation in Palestine. *Empire Forest. Jour.* 4: 24-38. 5 pl. 1925.—About 125,000 acres are involved. A barren dune is first stabilized with *Amphiphila arenaria*. Behind the dune *Tamarix articulata* is planted in a wide belt; other grasses are planted and then various acacias, poplars, pines, and eucalypts are set out.—*E. N. Munns.*

7145. THOMSON, THOMAS. Douglas fir plantation at Llandinam, Montgomeryshire, Wales. *Empire Forest. Jour.* 2: 236-242. 1923.—The results of a remeasurement of a 38-year old plantation are described.—*E. N. Munns.*

7146. THORELL, ERIK. Riksskogstaxeringen. [The royal forest survey.] *Skogen* 13: 37-57, 72-88, 101-140. 40 fig. 1925.—A forest survey of all Sweden, begun in 1911, has now been completed on over 50% of the country's forest area. A system of strip surveys, carefully worked out in its details, is run across the country from west to east at intervals of 5-10 km. depending on the character of the country and intensity of cultivation. Timber estimates are made on belts 10 m. wide along the whole strip, and more detailed studies of growth, soil and vegetation type, are taken at 2 km. intervals. Species, DBH in mm., bark thickness, age at breast height, diameter growth in the last 10 years, height and form class are taken for each sample tree. Height growth is determined with field glasses in conjunction with the hypsometer. Weekly reports with all tally sheets and increment cores for checking are forwarded to headquarters in Stockholm where all crew chiefs assemble at the end of the field season for computation of results and reports. Progress of the different field parties is recorded on a map at headquarters, so that new assignments may be made most efficiently. All material and reports sent in are carefully checked; even increment cores are remeasured. Sample tree blanks are worked up, sorted, and special summaries made for different altitudinal provinces, types of ownership and sites, using special tabulating devices. Over 30,000 such cards must be computed after a summer's work. The percent of the area covered by the estimate varies from 0.2 to 0.05 and the cost amounts to about 1.8 ore (approximately $\frac{1}{2}$ cent) per ha.—*Henry I. Baldwin.*

7147. THORPE, CARLYL. A journey to the walnut sections of Europe and Asia. 101 p. 14 pl. Los Angeles, 1923.

7148. TILLOTSON, CLAUDE R. Growing and planting coniferous trees on the farm. U. S. Dept. Agric. Farmers' Bull. 1453. ii + 38 p., 28 fig. 1925.

7149. TISCHENDORF, WILHELM. Gesetzmässigkeit des Höhen- und Stärkenzuwachses unserer Nadelhölzer während ihrer Vollkraft. [The laws of height and diameter growth of conifers during middle age.] *Centralbl. Gesam. Forstw.* 51: 69-90, 217-237. 1 fig. 1925.—Mathematical laws of growth, based on sap pressure, are developed for *Picea excelsa*.—*W. N. Sparhawk.*

7150. TOLSKY, A. Die Wälder Russlands. [The forests of Russia.] Centralbl. Gesam. Forstw. 51: 42-45. 1925.

7151. TOLSKY, A. P. Ueber den Samenabfall in Weissföhrenbeständen. [The seedfall of pine.] (With comment by CIESLAR.) Centralbl. Gesam. Forstw. 50: 153-159. 1924.—The results of an 8-year experiment in catching the seed under *Pinus silvestris* stands in Russia are summarized. Some seed fell in every year; most of it fell in May and June, and during the day; the heaviest seed was first to fall. Dark colored seed, though somewhat heavier than light colored, produced smaller seedlings.—W. N. Sparhawk.

7152. TRAGARDH, IVAR. Problems and methods in forest entomology. (With comments by F. C. CRAIGHEAD.) Jour. Forest. 22: 64-81 [645-662]. 1924.

7153. TRESCKOW, VON. Forstwirtschaftlicher Rückblick auf das Jahr 1924. [Review of forestry for 1924.] Zeitschr. Forst.- u. Jagdw. 57: 531-540. 1925.—Discussion of the general economic situation and of the economic condition of the forest and wood industries. The Prussian state forests suffered heavy loss in growing stock through Belgian and French indemnity cuttings, and still greater loss through the mass spread of pine Noctua. The acquiring of desirable seed for reforestation in the area destroyed by pine Noctua is the chief problem.—J. Roesser, Jr.

7154. TREVOR, C. G., AND E. A. SMYTHIES. Practical forest management. 220 p., 18 pl. Govt. Press: Allahabad, 1923.—This is an account of the history and development of forest management in the United Provinces (India). Six forest types are recognized: these, with characteristic species, are scrub (*Bassia latifolia*, *Terminalia belerica*); sal (*Shorea robusta*); chir-pine (*Pinus longifolia*); deodar (*Cedrus deodara*); spruce (*Picea morinda*, *Abies pindrow*, *Aesculus indica*, *Betula utilis*); oaks (*Quercus incana*, *Q. dilatata*, *Q. semecarpifolia*). The application and calculation of yields under the clear cutting, shelterwood, selection, and coppice systems are described, as are also the management of bamboo and the production of naval stores. In the appendix are given a classification of thinnings, an outline of reproduction methods, and the organization of a fire control system.—E. N. Munns.

7155. TROUP, R. S. Forestry in Uganda. 39 p., Map. Crown Agent for the Colonies: London, 1923.—Three vegetative types are recognized, these, with characteristic species, are evergreen rain forest (*Podocarpus gracilior*, *Baikaea Eminii*, *Entandrophragma utile*, *Cynometra alexandri*, and *Khaya anthotheca*); savannah (*Chlorophora excelsa*, *Omperata arundinacea*, *Pennisetum purpureum*); evergreen bush forest (*Crataeva Adansonii*, *Bauhinia fassoglensis*, *Euphorbia antiquorum*). Planting and fire protection are necessary on many areas. Fuel can be grown under a coppice system, and timber areas on a selective one.—E. N. Munns.

7156. TROUP, R. S. Forest fire protection. Tropical Agric., W. I., 2: 167-169. 1925.

7157. TRUEBA, SALVADOR ROBLES. El abeto de Douglas. [Douglas fir.] España Forest. 8: 2-6, 16-19. 2 pl. 1922.—Extensive planting of *Pseudotsuga taxifolia* in northern Spain is recommended.—W. N. Sparhawk.

7158. TSCHERMAK, LEO. Die Formen der Lärche in den österreichischen Alpen und der Standort. [Forms of larch in Austrian Alps and their relation to site.] Centralbl. Gesam. Forstw. 50: 201-283. 12 pl. 1924.—It is concluded that crookedness is not hereditary, but is merely a modification due to external factors of site.—W. N. Sparhawk.

7159. TSCHERMAK, L. Fragen des Waldbaues im Hochgebirge. [Silviculture at high altitudes.] Centralbl. Gesam. Forstw. 51: 237-249. 1925.—Silvicultural methods applicable to the high mountains of Switzerland and Austria are discussed.—W. N. Sparhawk.

7160. TSCHERMAK, LEO. Mitgliederversammlung des Deutschen Forstvereines in Salzburg, 14-19 September, 1925. [Salzburg meeting of German Forestry Association.] Centralbl. Gesam. Forstw. 51: 360-380. 1925.—This consists of summaries of the following papers: DENGLE, The "Dauerwald" in theory and practice; W. MANTEL, Effects of grazing on forestry in high mountains; WAPES, Forestry associations; BERNHARD, Financial accounting and forestry; and GERNLEIN, Use of machinery in forestry.—W. N. Sparhawk.

7161. TSCHERMAK, LEO. Nochmals über die Säbelwüchsigkeit der Bäume. [Saber-form growth of trees.] Centralbl. Gesam. Forstw. 51: 270-273. 1925.—Hartmann's paper (See this issue, Entry 6903) is commented on.—W. N. Sparhawk.

7162. TSCHERMAK, LEO. Wirkungen des Standortsfaktors Licht an durch Schnee zum Boden gedrückten Nadelhölzern. [Effect of light on coniferous trees that have been bent

down by snow.] Centralbl. Gesam. Forstw. 51: 351-356. 3 fig. 1925.—On twigs of *Abies* which had been bent over so that the under sides of the needles were turned sideways or upward, new foliage came out in the normal position, or at 90°-180° angles from the positions of the old needles. Similar phenomena were observed with *Pinus* and *Picea*.—W. N. Sparhawk.

7163. TSCHERMAK, (LEO). [Rev. of: KLEIN, LUDWIG. *Unsere Waldbäume, Sträucher und Zwergholzgewächse*. (Our trees, shrubs, and small woody plants.) 2nd ed., 35 + 154 p., 38 fig., 96 pl. Carl Winter: Heidelberg, 1923.] Centralbl. Gesam. Forstw. 51: 130-131. 1925.

7164. TSCHERMAK, (LEO). [Rev. of: KLEIN, LUDWIG. *Ziersträucher und Parkbäume*. (Ornamental shrubs and park trees.) 80 + 135 p., 108 pl. Carl Winter: Heidelberg, 1923.] Centralbl. Gesam. Forstw. 51: 131-132. 1925.

7165. [TUNISIA], DIRECTION DES FORÊTS. (Direction Générale de l'Agriculture, du Commerce, et de la Colonisation.) *Le chêne-zéen en Tunisie*. [*Quercus mirbeckii* in Tunisia.] 12 p., 1 map. Imprimerie Centrale: Tunis, 1922.

7166. UGARTE, JESUS. *Resinacion del pino laricio*. [Extraction of resin from *Pinus laricio*.] España Forest. 6: 184-189. 1920.—Experiments on some 20,000 trees in 2 forests in the province of Cuenca from 1915 to 1919 gave an average annual yield of 1.329 kgm. of resin per tree. Faces 14 cm. wide yielded 28% more than those 12 cm. wide, and those 2 cm. deep yielded 12% more than those 1.5 cm. deep. The yield per tree was 67% greater with 2 faces than with 1 of the same size. Pines of the 5a diameter class (larger) yielded 30% more resin than those of class 3a (smaller).—W. N. Sparhawk.

7167. UNION OF SOUTH AFRICA FOREST DEPT. British Empire Forestry Conference, Ottawa, 1923.—Statement relating to the Union of South Africa. 19 p. Govt. Printing & Stationery Office: Pretoria, 1923.

7168. U. S. A. DEPT. OF AGRICULTURE. FOREST SERVICE. *Instructions for making timber surveys and maps; including standard classification of forest types*. v + 45 p. Govt. Printing Office: Washington, 1925.

7169. UNWIN, A. H. *A short description of the forests of Cyprus*. 28 p., 9 pl. Gov't. Printing Office: Nicosia, 1925.

7170. URGOITI, NICOLAS MARIA DE. *Posible desarrollo industrial con especies forestales producidas en el país*. [Possible industrial development with home grown timber.] España Forest. 6: 165-171. 1920.—For paper pulp, posts, and mine timbers Spain requires yearly about 600,000 cu. m. of wood, of which $\frac{2}{3}$ is of coniferous species. Three species are specially recommended for planting: *Pinus insignis* (*P. radiata*), which has been planted for 40 years in Vizcaya and has produced at the rate of 56 cu. m. per ha. per annum with a 30 year rotation; *P. maritima* (*P. pinaster*), which yields 22.3 cu. m. annually with a 28-30 year rotation; and *Populus canadensis*, which yields 40 cu. m. annually with a 15-year rotation.—W. N. Sparhawk.

7171. VEATCH, J. O. *Soils in relation to forestry*. Mich. Agric. Exp. Sta. Quart. Bull. 6: 67-69. 1923.—A table is given showing the types of forest associated with 16 different types of soils.—Ernst A. Bessey.

7172. VILLAR, JACOBO ARIAS. *Algunas notas sobre aclimatación de los especies semi-tropicales de eucalipto*. [Acclimatization of two semi-tropical eucalypts.] España Forest. 10: 92-94. 1924.—*E. pilularis* and *E. crebra* have grown fairly well in Spanish Galicia and would probably thrive in Estremadura and south central Spain.—W. N. Sparhawk.

7173. VILLAR, JACOBO ARIAS. *El Eucalyptus globulus en Galicia*. [*E. globulus* in Galicia.] España Forest. 10: 129-131. 2 pl. 1924.—The tree thrives in the coastal region of Portuguese and Spanish Galicia. Its wood is excellent for many uses when properly seasoned. The trees should be girdled 2 or more years before felling, and the lumber should be carefully piled under cover; satisfactory results are also obtained by cutting the trees while green, quartering the logs and submerging them in running water for 3 months, then air-drying for a year before sawing. The lumber should then be kept under cover for 2-3 years before working.—W. N. Sparhawk.

7174. VILLAR, JACOBO ARIAS. *El Eucalyptus obliqua en Galicia*. [*E. obliqua* in Galicia.] España Forest. 6: 56-59. 2 pl. 1920.—This Tasmanian tree thrives in favorable locations in northwestern Spain, where 8-year-old trees average 20 m. tall and 40 cm. in diameter. It grows faster than *E. globulus*, is less susceptible to frost and drought in nurseries than most

eucalypts, and is easier to transplant. The wood, which resembles that of oak, is adapted for many uses.—*W. N. Sparhawk.*

7175. VILLAR, JACOBO ARIAS. Sobre eleccion de especies forestales. Las acacias australianas. [Choice of species: the Australian acacias.] España Forest. 11: 37-40. 1925.—*A. melanoxylon*, *A. decurrens* var. *mollissima*, *A. dealbata*, and *A. pycnantha* are recommended for planting in northwestern Spain. The first 2 have done very well in northern Portugal. The bark of *A. pycnantha* in Portugal contains 38% of tannin, or more than in Australia or South Africa. *A. pycnantha* and *A. decurrens* grow even on dry sandy soil; *A. dealbata* requires moisture, and *A. melanoxylon* requires a fairly good site.—*W. N. Sparhawk.*

7176. VILLAR, JACOBO ARIAS. Sobre eleccion de especies forestales. Nota sobre dos especies de eucalipto. [Choice of species; notes on two species of Eucalyptus.] España Forest. 11: 25-28. 1 pl. 1925.—In the Atlantic and Cantabrian provinces of Spain, *Eucalyptus globulus* and *E. obliqua* reach diameters of 1.3-1.5 m. and a height of 50 m. in 40 years. They are capable of producing at least 500 cu. m. of wood per ha. in 30 years on fairly good soil; a small 50-year-old plantation has grown at the average annual rate of 55 cu. m. to the ha. Even on dry rocky sites they do well and can yield 4 times the return of maritime pine. The wood is valuable for construction and industrial purposes, makes good fuel, and yields more cellulose (42%) than poplar (35%) or fir (37%). Plantations require little care, and extend themselves by natural seeding. Best results are obtained by planting after the fall rains or sowing after the spring equinox.—*W. N. Sparhawk.*

7177. VILLAR, JACOBO ARIAS. Sobre eleccion de especies forestales. Varios eucaliptos. [Choice of species; various eucalypts.] España Forest. 11: 53-56. 1925.—*E. rostrata* does not do well in northern Spain, but thrives in the south. Poor results have been obtained with *E. leucoxylo*, *E. marginata*, *E. gomphocephala*, and *E. resinifera*. *E. Gunnii* and *E. coriacea*, which are supposed to withstand considerable frost, are seriously injured by late spring and early autumn frosts in the interior valleys. *E. urnigera*, which is reported to endure temperatures of -12°C . may do better. *E. calophylla* has grown well in some localities.—*W. N. Sparhawk.*

7178. VINUESA, JOSÉ MARÍA. Necesidad de la experimentación para la resolucion de los problemas económico-forestales. [Need for experiments on forest economic problems.] España Forest. 7: 37-40. 1921.—The production of resin is a function of soil, climate, density of stand, diameter and form of trees, rate of growth, period during which bleeding may be carried on, dimensions of the faces, and the skill and willingness of the workers. Open stands yield more resin per tree than dense stands. Trees less than 30 cm. in diameter should not be bled. Comparatively short-boled trees with large crowns yield more than tall, small-crowned trees; in some cases lopping off the main leader, causing the crown to spread, has resulted in increased yields of resin.—*W. N. Sparhawk.*

7179. VITALE, A., E. A. PAVARI. Qualche considerazione sulla ricostituzione dei boschi danneggiati dalla guerra. [Some considerations upon reconstructing the forests damaged in the war.] Atti del IV° Congresso Forestale Italiano, 1921. P. 103-120. Udine, Italy, 1923.

7180. VORREITH. Die Wienerwaldlärche. [The larch of the Vienna forest.] Wien. Allgem. Forst u. Jagd. Zeitg. 44: 130-131, 137-138. 1926.—In a few parts of the Vienna forest, particularly in fir stands, scattered larches are found, which are quite different from those more commonly found in the forest, having better form, a faster rate of growth (especially height), more sturdy appearance of crown, and a redder wood of better quality. The author considers that the more common trees have been grown from seed from the high Alps, while the few of better form represent the last survivors of the larch native to the area. These were never very common (limited to areas with 800-1000 mm. of precipitation a year) and were heavily cut, even some centuries ago. In support of his contention, he compares the 2 forms with the "highland" and "lowland" forms recognized in the Alps. He advocates treatment that will bring these superior trees into heavy cone-bearing and a careful propagation from all available seed, as the volume per tree is apparently at least $\frac{1}{3}$ greater at 100 years, as compared with the larch now grown from Alpine seed.—*F. S. Baker.*

7181. WACKERMAN, A. E. Growth of the "Grayling pine" [*Pinus strobus* and *P. resinosa*]. Jour. Forest. 22: 796-797. 1924.

7182. WAHLENBERG, W. G. Forestation research in Montana and north Idaho. Jour. Forest. 23: 589-599. 1925.

7183. WALKER, H. C. The Burma selection system. Empire Forest. Jour. 3: 93-98. 1924.—The Burmese system, with careful protection of the immature timber, has resulted in full stocking and good growth on the land cut over.—*E. N. Munns.*

7184. WALLY, OTHMAR. Die Ermittlung des Massenzuwachsesprozentes an stehenden Stämmen und Beständen. [Determining the volume increment per cent for standing trees and stands.] Centralbl. Gesam. Forstw. 51: 314-351. 1925.

7185. WARR, J. H. Summary of results of treated and untreated experimental sleepers laid in the various railway systems of India, brought up to date. India Forest Bull. Econ. Ser. 59. 1-34. Calcutta, 1925.

7186. WATSON, RUSSELL. Notes on natural regulation and growth of northern hemlock and hardwood forests. Jour. Forest. 23: 936-940. 1925.

7187. WEIR, JAMES R. The effect of broadcast burning of sales areas on the growth of cull-producing fungi. Jour. Forest. 21: 183-184. 1923.—Since it reduces possibilities of fruiting of cull-producing fungi on the logging slash, broadcast burning on clear-cut sales areas in Montana and Idaho may, at least from the standpoint of forest sanitation, be considered good silviculture. Ten species of cull-producing fungi are listed, with the species of slash on which they were found fruiting and the effects produced on them by burning.—*Philip C. Wakeley.*

7188. WEISS, HOWARD F. Forest products investigations. (With comments by C. P. WINSLOW and E. FRITZ.) Jour. Forest. 23: 565-582. 1925.

7189. WHITE, C. T., AND W. D. FRANCIS. Queensland trees. Queensland Agric. Jour. 24: 438-440. 2 pl. 1925.—The dimensions, field characters and distribution of *Olea paniculata* are outlined. The lower part of the stem and herbarium specimens of the species are illustrated by photographs.—*W. D. Francis.*

7190. WHITFORD, H. N. The conservative utilization of tropical forests. Bull. Pan-Amer. Union 59: 906-913. 1925.—The first requisite is a more accurate knowledge of the forests and forest products and the economic conditions surrounding their complete utilization. Another essential is a classification of the woods, especially those that give most promise. Forest resources other than timber should also be studied, such as oil palms and other palm products; tanning materials; wood oils and resins; edible nuts; and latex-bearing plants. Data should be obtained on the distribution and the quantities available of each of these products. Both producing and consuming nations have an interest in such investigations.—*M. N. Levine.*

7191. WICHMANN, HEINRICH E. Wurzelverwachsungen und Stocküberwallung bei Abietineen. [Root grafts and stump callusing of Abietineae.] Centralbl. Gesam. Forstw. 51: 250-258. 1925.—The roots of different individual trees were found grown together in stands of *Abies pectinata*, *Picea excelsa*, *Larix europea*, *Pinus silvestris*, and *P. austriaca*. When one member of such a union is cut, the stump continues to draw nourishment from the other, and in some cases, particularly with *Abies*, the top of the stump partially or entirely heals over. In a thinned stand of spruce, 34% of the stumps were connected through their roots with living trees.—This phenomenon may account for some instances of infection of standing trees by fungi such as *Agaricus melleus* and *Trametes pini*, and also for the death of several trees in a group when one is struck by lightning.—*W. N. Sparhawk.*

7192. WICKENDEN, H. R. New devices for solving some problems in timber mensurations. Jour. Forest. 21: 260-265. 3 fig. 1923.—Determination of the yield and sizes of saw logs and pulpwood, of length of logs, of the minimum allowable diameter of logs, and of other figures, is expedited by the use of a taper chart showing the increasing heights of given diameters on trees of increasing D.B.H. The construction of the taper chart is simplified by the use of the absolute form quotient method of timber estimating.—*Philip C. Wakeley.*

7193. WICKENDEN, H. R. The partial count method of timber estimating. Jour. Forest. 22: 518-528. 4 fig. 1924.

7194. WIEDEMANN, EILHARD. Die praktischen Erfolge des Kieferndauerwaldes. [Practical results of the pine "Dauerwald" system.] iv + 184 p., 27 fig. Friedr. Vieweg & Sohn:

Braunschweig, 1925.—The author made an intensive study, with many measurements and sample plots, of the forests at Bärenthoren, Eberswalde, and Frankfurt a. O., in which the Dauerwald system has been applied. He concludes that the success attained with the system has been due chiefly to the favorable sites, and that it can hardly be recommended for general application, especially on poor sites. Scattering of limbs over the soil and frequent thinnings of moderate intensity can be recommended for all sites; heavy reproduction cuttings, mixture of species, and reproduction under shelter of the old stand may be effective in some instances, but highly undesirable in others. On poor, sandy soils, better results are obtained by clear-cutting and planting pine, provided the soil is properly worked and cultivated before and after planting.—*W. N. Sparhawk.*

7195. WILSON, ELLWOOD. Forest fires in Canada. *Empire Forest.* 1: 43-46. 1922.

7196. WINSLOW, CARLILE P. Efficient forest utilization—a major factor in an effective national forest policy. *Jour. Forest.* 22: 29-37. 1924.

7197. WOLCOTT, GEORGE N. Comparative resistance of woods to the attack of the termite (*Cryptotermes brevis* Walker). Porto Rico Insular Exp. Sta. Bull. 33. 1-15. Rio Piedras, 1924.—Cypress and mahogany resist termite attack and are as effective as creosoted wood.—*E. N. Munns.*

7198. WOODWARD, KARL W. The relative unimportance of protection and silviculture as compared with sustained yield. *Jour. Forest.* 21: 173-174. 1923.—“Lookout towers, speeder patrol, brush burning, scattered seed trees are merely means to an end. Sometimes they are good, sometimes wholly bad. Sustained yield is all that counts.”—

7199. WRIGHT, W. G. Suggested applications of statistical methods in forestry practice. *Jour. Forest.* 22: 372-385. 1924.

7200. WRIGHT, W. G. Variation in stand as factor in accuracy of estimate. *Jour. Forest.* 23: 600-607. 1925.

7201. WRIGHT, W. G., W. M. ROBERTSON, AND G. A. MULLOY. Forest research manual. 93 p. Canada Dept. Interior, Forest Branch: Ottawa, 1925.

7202. YASUMBA, TADASHI. [The shot-borer beetle of *Chamaecyparis obtusa*.] (Japanese, English summary.) Bull. Forest Exp. Sta. Imperial Household 1: 30-34. 1 pl. 1925.—A scolytid, *Phloeosinus perlatus* Chap., attacks and kills *Chamaecyparis obtusa*, especially stands 10-20 years old. Control measures include thinning, removal of suppressed and unhealthy trees removal of cut logs from the forest, and use of trap trees. Pure even-aged stands are especially liable to injury.—*W. N. Sparhawk.*

GENETICS

ORLAND E. WHITE, *Editor*

(See also in this issue Entries 5871, 5885, 5918, 5920, 5922, 5929, 5957, 5959, 5972, 5985, 5998, 6034, 6307, 6308, 6310, 6311, 6326, 6331, 6366, 6381, 6401, 6411, 6426, 6427, 6475, 6564, 6743, 6779, 6780, 6781, 6796, 6808, 6810, 6818, 6820, 6902, 6949, 7027, 7032, 8104, 8140, 8142, 8188, 8191, 8223, 8262, 8546, 8708, 8762, 8790, 8794, 8799, 8974, 9276, 9400, 9418, 9521)

7203. ANONYMOUS. New “topepo” destined to be one of the popular vegetables. Seed World 18: 14. 1925.—“Topepo” is said to be a new fruit originated by crossing the tomato and pepper.—*Richard Wellington.*

7204. ANONYMOUS. Races differentiated by blood groups. *Eugenical News* 10: 142-143. 1925.—This briefly summarizes the work on the character of the 4 blood groups. Human races can be classified on the basis of these groups by the ratio of the percentage of population whose blood cells contain *A* (factor causing blood cells to agglutinate in presence of serum of either Groups I or III) to the percentage whose blood cells contain *B* (factor causing blood cells to agglutinate in presence of serum from either Groups I or II). This ratio is the “racial index.” A table showing the blood group characteristics and the racial index of various races is given.—*Orland E. White.*

7205. ANONYMOUS. Statens Forsøgsstationer. [State Experiment Stations.] Vort Land-

brug, 1925.—No initiative has been taken by the government, but when individuals in the service of the State Experiment Stations showed ability as breeders, means for the work were offered them. Moreover, theoretical investigations of methods and possibilities which could not well be accomplished by private breeders have been made by the state workers. Of the varieties sent out by the Stations the following deserve to be mentioned: Tystofte Prentice barley, Tystofte small wheat II, Tystofte Standhvede II, Mangold Tystofte Barres V, Lyngby winter barley, Lyngby heather oats, the club-root resistant varieties Studsgaard Bangholm and Herning Bangholm swede. The state competitions, initiated by Helweg, are renowned for their impartiality and for the direct advisory service which is connected with them.—*Ernst Gram.*

7206. ANONYMOUS. A sad example. [Review of: ERSKINE, CICELY. Sex at choice. 187 p. Putnam: New York, 1925.] *Eugenical News* 10: 145. 1925.

7207. ANONYMOUS. [Rev. of: CUTLER, D. WARD. Evolution, heredity, and variation. 147 p. Christophers: London, 1925.] *Nature* 116: 781. 1925.

7208. AKEMINE, M., UND S. NAKAMURA. Über den Umfang und die Ursachen natürlicher Bastardbefruchtung bei Reis. [Frequency and causes of natural cross-fertilization in rice. *Zeitschr. Pflanzenzücht.* 11: 1-22. 1925.—The average frequency of cross-fertilization in 19 varieties of rice for a period of 5 years was 0.703%. The maximum in any variety was 1.669%; the minimum, 0.165%. The percentages were determined from varieties growing in alternate rows. The natural crossing between adjacent fields would probably be much less. Cross-fertilization occurs when the florets open before the anthers have shed pollen. Delayed anthesis is characteristic of certain varieties and is further increased by weather conditions, particularly low temperature and high humidity.—P. C. Mangelsdorf.]

7209. ALVERDES, FRIEDRICH. Die neuen Towerschen Versuche an *Leptinotarsa* zur Lösung des Artbildungsproblems. [Tower's new studies on *Leptinotarsa* toward the solution of the problem of species formation.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 26: 161-174. 1921.

7210. ALVERDES, FRIEDRICH. Die Rolle einer "kumulierten Nachwirkung" in der Stammesgeschichte. [Rôle of cumulative after effect in phylogeny.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 27: 52-65. 1921.

7211. ALVERDES, F. Erbllichkeit und Nicht-Erblichkeit. [Heredity and non-heredity.] *Naturw. Wochenschr.* 20: 377-381. 1921.

7212. ALVERDES, F. Rassen- und Artbildung. [The formation of races and species.] 118 p. Borntraeger: Berlin, 1921.

7213. ANDERSON, E. G. Crossing-over in a case of attached X chromosomes in *Drosophila melanogaster*. *Genetics* 10: 403-417. 1925.

7214. APERT, E., L. CUENOT, MAJOR DARWIN, F. HOUSSAY, L. MARCH, G. PAPILLANT, ED. PERRIER, CH. RICHEL, ET G. SCHREIBER. *Eugenique et sélection.* iii + 248 p. F. Alcan: Paris, 1922.

7215. AREY, LESLIE B. Direct proof of the monozygotic origin of human identical twins. *Anat. Rec.* 23: 245-251. 1 pl. 1922.

7216. ARMBRUSTER, L. Systematik und Genetik. [Taxonomy and genetics.] *Verhandl. Deutsch. Zool. Ges.* 1921: 77-79. 1921.

7217. ARTOM, CESARE. Ancora del tetraploidismo dei maschi dall' *Artemia salina* di Odessa in relation con alcuni problemi generali di genetica. [The tetraploidism of the males of *Artemia salina* of Odessa in connection with some general problems of genetics.] *Atti R. Accad. Lincei Rendiconti Cl. Sci. Fis. Mat. e Nat.* 33: 34-36. 1924.

7218. ARTOM, CESARE. Il significato delle razze e delle specie tetraploidi e il problema della loro origine. [The significance of tetraploid races and species and the question of their origin.] *Riv. Biol.* 3: 265-278. 1921.

7219. ARTOM, CESARE. Il tetraploidismo dei maschi dell' *Artemia salina* di Odessa in relazione con alcuni problemi generali di genetica. [The tetraploidism of the males of *Artemia salina* of Odessa in relation to some general problems of genetics.] *Atti R. Accad. Lincei Roma Rendiconti Cl. Sci. Fis. Mat. e Nat.* 32: 505-507. 1923.

7220. ARTOM, C. Le cellule germinative studiate nella loro tendenza a determinare il sesso. [Germ cells studied with relation to sex determination.] *Riv. Biol.* 6: 440-457. 1924.

7221. ARTOM, CESARE. Nuovi fatti e nuovi problemi sulla biologia e sulla sistematica del genere *Artemia*. I, II. [New facts and new problems concerning the biology and taxonomy of the genus *Artemia*.] Atti R. Accad. Lincei. 29¹⁻²: 65-68; 29¹¹⁻¹²: 468-472, 497-501. 1920.

7222. BABCOCK, E. B. Genetics and plant breeding in America. Proc. Pan-Pacific Sci. Congress 1: 122-123. 1923 (1924).

7223. BALLS, W. L. Defects in the theory and practice of selection. Rep. Proc. Imp. Bot. Conf. London 1924: 84-88. 1925.

7224. BANTA, ARTHUR M. A thelytokous race of Cladocera in which pseudo-sexual reproduction occurs. Zeitschr. Indukt. Abstamm.- u. Vererb. 40: 28-41. 8 fig. 1925.—This race differs from other races of *Daphnia pulex* by definite, though slight, morphological characteristics and by its malelessness and the development of "winter" eggs without fertilization. As in other Cladocera forms 2 types of eggs are produced—the ordinary parthenogenetic or "summer" egg and the sexual (ephippial) or "winter" egg. These 2 types are obviously different and identifiable at every stage of their development from the early ovarian eggs to the post-larval young, so that there seems no question of the homology between the normal sexual eggs of other Cladocera and the pseudo-sexual eggs of the thelytokous race. Pseudo-sexual eggs are freely produced, under appropriate conditions, and hatch as readily as the sexual eggs of other Cladocera. Previous cytological evidence indicates that in other Cladocera sexual eggs undergo normal maturation with chromatic reduction. Unusual chromosome behavior is suggested in the pseudo-sexual eggs else successive pseudo-sexual generations, as have been obtained, would seem impossible. This thelytokous race is cited as a possible step in advance in the evolution of Cladocera, in that (1) it has the ephippial egg adapting it to habitats in which periods of drought or low temperature preclude the survival of active Cladocera or of the sexual parthenogenetic eggs, and that (2) it possesses the obvious advantage that the non-occurrence of males leaves every individual productive of eggs of the type called forth by the particular temporary conditions of the environment.—*Author*.

7225. BATESON, W. The economic possibilities of plant breeding. Rept. Proc. Imp. Bot. Conf. London. 1924: 31-59. 1925.

7226. BATESON, W., AND GREGORY BATESON. On certain aberrations of the red-legged partridges, *Alectoris rufa* and *Saxatilis*. Jour. Genetics. 16: 101-123. 4 pl. 1925.—Three color types of the partridge (*Alectoris rufa*) are described, namely, bright, normal and dull. The differences are considered as probably due to factorial changes (mutations) from the normal. The types are thought to represent a series of multiple allelomorphs.—*F. A. Hays*.

7227. BATESON, W., AND A. E. GAIRDNER. Male-sterility in flax, subject to two types of segregation. Jour. Genetics 11: 269-275. 1 pl. 1921.

7228. [BAUR, E.] Байр, Е. Развитие сортоводства с 1914 года. [Progress in plant-breeding since 1914.] Бюл. Сорт.-с.-м. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust Kiev] 8: 3-10. 1924.

7229. BECKER, JOSEF. Handbuch des gesamten Gemüsebaues einschliesslich des Gemüsesamenbaues, der Gewürz-Arznei- und Küchenkräuter. Auf praktisch-wissenschaftlicher Grundlage unter besonderer Berücksichtigung exakter Pflanzenzüchtung. [General handbook of vegetable growing, including directions for seed growing of condiment, medical and kitchen garden plants. A practical treatise on a scientific basis with special reference to the principles of plant breeding.] 1065 p. illus. P. Parey: Berlin, 1924.

7230. BECKER, J. Schlussfolgerungen aus der Erscheinung der vegetativen Bastardspaltung. [Conclusions regarding the phenomenon of vegetative segregation.] Zeitschr. Pflanzenzücht. 9: 189-215. 1924.—The author tries to advance the quantity notion following Goldschmidt's lead. For a certain character complex, as the color of a mature flower, for example, he takes as the basis biophores which would correspond to chromomeres. Diploid individuals with 2 biophores would exhibit the recessive condition; diploid individuals with 4 biophores, the dominant condition. The hybrid between the 2 with 3 biophores would show dominance when the minimum hereditary mass for dominance exceeds 2; it would be intermediate when 3 exhibit a stable intermediate condition between 4 and 2 biophores; it would be a mosaic type when 3 form a labile intermediate condition between 4 and 2, which through small rearrangements, such as come about with every vegetative cell division, suddenly change from one to the other extreme. Such a point of view of course makes the presence-absence

hypothesis superfluous. These premises are followed through for the monohybrid and di-hybrid schemes of segregation. Also in the intermediate, constant hybrids the numerical example gives an easily comprehended, obvious formulation. Similarly, several linkage phenomena are clearly set forth with a quantitative division of the hereditary substance. (Trans. of abstr. in Resumptio Genetica 1: 266. 1925.)—*E. B. Babcock.*

7231. BECKER, J. Vegetative Aufspaltung von Bastarden. [Vegetative segregation of hybrids.] Gartenwelt 25: 517-519. 1921.

7232. BECKER, K. E. Untersuchungen über die Ursache der Sterilität bei einigen Prunaceen. [Investigations on the causes of sterility in several Prunaceae.] 43 p., 1 pl. Diss. Halle, 1920.

7233. BEER, RUDOLPH. Notes on the cytology and genetics of the genus *Fuchsia*. Jour. Genetics 11: 213-227. 2 pl. 1921.

7234. BĚLAŘ, KARL. Der chromosomenbestand der *Melandrium*-Zwitter. [The Chromosomes in hermaphroditic *Melandriums*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 39: 184-190. 3 fig. 1925.—Hermaphroditic forms of *Melandrium album* have an XY pair of chromosomes in both the micro- and megaspore mother-cells. The chromosome number, size and behavior during meiosis of hermaphrodites corresponds to that found in typical ♂ plants of this species.—*A. E. Longley.*

7235. BELL, ALEXANDER GRAHAM. A simple system of designating relationships. Jour. Heredity 12: 210-212. 1921.

7236. BELLAMY, A. W. Breeding experiments with the viviparous teleosts, *Xiphophorus helleri* and *Platyopocilus maculatus* (Günth.). [Abstract.] Anat. Rec. 23: 98-99. 1922.—Most of the possible straight, reciprocal, and back-crosses have been made. Only general results from the cross '*nigra*' ♂ and *X. helleri* ♀ can be given here. F₁ hybrids are uniform and deep greenish black, much darker than the darkest parent. One mating gave 8 ♂, 1 ♀; another 0 ♂, 10 ♀; another 6 ♂, 0 ♀. Dorsal fin rays, 11-12. Males have small 'sword'—a ♂ secondary sex character inherited through the ♀. F₂: 1 mating gave variable greenish blacks, ♂ 12, ♀ 30; variable whites, ♂ 30, ♀ 5. Two blacks approximated the '*nigra*.' Several white ♂ show the 'sword.' A peculiar type of sex-linked inheritance is indicated in this and other crosses. Most F₁ hybrids are fertile, many F₂ and sesqui-hybrids are sterile. Intersexes occur. Form indices vary from one extreme to the other in both sexes.—*Authors.*

7237. BELLING, JOHN. A unique result in certain species crosses. Zeitschr. Indukt. Abstamm.- u. Vererb. 39: 286-288. 1925.—One species of *Stizolobium* (A) when crossed with other species of the same genus (unnamed) gives rise to F₁ plants in which half of the pollen and embryo sac mother cells abort. It is assumed that 2 genes (L) and (M) are necessary for gamete development. These genes are in non-homologous chromosomes having in most species the constitution $\frac{e w (M)}{e w (M)} + \frac{L}{L}$, but due to translocation of a segment between non-

homologous chromosomes species A comes to have the formula $\frac{E W (L)}{E W (L)} + \frac{M}{M}$. E is a gene for late flowering, W for deeply pigmented mottled seedcoats. The F₁ would be $\frac{E w (L)}{e w (M)} + \frac{(M)}{(L)}$.

In an F₁ involving species A, half the gametes would therefore contain (L)(L) or (M)(M) and be non-viable. Half the F₂ plants are therefore fertile, and resemble either A or the other parent; the other half are semi-sterile and resemble the F₁. A few crossover classes are found. When different F₂ plants are crossed the results in half the cases are such as one would expect of crossing like parents. In the other half the progeny are like the F₁ and semi-sterile.—*Margaret M. Lesley.*

7238. [BERG, L. S.] Бєр, Л. С. Закономерности в образовании органических форм. [Regularities in the evolution of organisms.] (English summary.) Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. & Plantbreed.] 14⁵: 19-68. 1924-1925 [1925].—The author discusses (1) regularities of morphological characters which are best expressed in the appearance of similar forms in the species of related genera; (2) regularities in the ontogeny and phylogeny, where the ontogenetic and phylogenetic acceleration is stressed, meaning that

in the ontogeny the development of the progressive organs is accelerated and in ontogeny as well as in phylogeny the progressive characters appear 1st of all in young individuals; (3) regularities in geographic distribution; and (4) regularities with respect to physiology and ecology.—*M. Demerec.*

7239. BERNSTEIN, FELIX. Zusammenfassende Betrachtungen über die erblichen Blutstrukturen des Menschen. [Synthetic consideration of the inheritable blood structures of man.] Zeitschr. Indukt. Abstamm.- u. Vererb. 37: 237-269. 1925.—The author regards the $\frac{A}{B}$ index of Hirschfeld for blood-groups as not tenable. The gene-hypothesis of 2 independent, mendelizing gene-pairs is not tenable; but, on the contrary, must be replaced by the view of 3 multiple allelomorphs. There is a mixture of 3 races, which may be designated A-, B- and R-races (R for "remainder" race); and it is possible to calculate the numerical percentage of each of these races in each locality. The A-race and the B-race are late mutations of the R-race, the latter today being comparatively pure among the Amerinds and the Filipinos. The mutations occurred primarily in the agglutinogens in the cells, while the serum has undergone no change in the 3 races. By some protective action the autoagglutination of an agglutinin, say A, in the blood cell is hindered by the corresponding agglutinin α in the serum. The cause of these mutations possibly is referable to consumption of rice in the orient—the rice culture probably being subsequent to separation of Amerinds and Mongolians. Proof is afforded that positive mutations arise at a particular time and place and persist unchanged even with back crossing. Tables of proportions of the 3 types in various populations are given.—*Charles B. Davenport.*

7240. BHIDE, R. K. Our experience in crossing different varieties of rice at Karjat. Agric. Jour. India 20: 280-284. 1925.

7241. BIERENS DE HAAN, J. A. Het nieuws te werk van Arnold Pictet op het gebied der causale genetika. [Arnold Pictet's most recent work on causal genetics.] Genetica 6: 383-390. 1924.—This paper is a discussion of Arnold Pictet's investigation of the causes influencing the phenotype. The author treats of Pictet's experiments on keeping down the winter rust of *Porihesia similis*, *Lasiocampa quercus* and *Abrascas grossulariata*; the influence of altered food; the raising of geographical races.—*S. J. Wellensiek.*

7242. BIERENS DE HAAN, J. A. Nieuwe experimenten over het versmelten van klemen. [New experiments on the fusion of germ-cells.] Genetica 3: 401-410. 3 fig. 1921.

7243. BITTERA, M. Adatok a márk termesztéséhez és kiválasztásához. [Contribution to the cultivation and selection of the poppy.] Kiserletüyyi Közlemények 24: 1-16. 1921.

7244. BLAKESLEE, ALBERT FRANCIS. Variations in *Datura* due to changes in chromosome number. Amer. Nat. 56: 16-31. 7 fig. 1922. (See also Bot. Absts. 12, Entry 3123.)

7245. BLARINGHEM, L. Études sur les hybrides d'orges (*Hordeum*). [Studies on the hybrids of barleys (*Hordeum*).] Ann. Sci. Agron. Française et Étrangère 38: 177-229. 1921.

7246. BLARINGHEM, L. Mosaïque et sexualité. Bull. Soc. Bot. France 68: 156-161. 1921.

7247. BLARINGHEM, L. Sur la production de variétés à graines marbrées de la Fève (*Vicia faba* L.). [Production of varieties with mottled seed in *Vicia faba* L.] Compt. Rend. Acad. Sci. [Paris] 175: 666-668. 1921.

7248. BLARINGHEM, L. Variations et fertilité de l'hybride *Primula variabilis* Goupll comparées à celles de ses parents *P. vulgaris* Huds. et *P. officinalis* Scop. [Variations and fertility of the hybrid, *P. variabilis*, compared with those of its parents, *P. vulgaris* and *P. officinalis*.] Compt. Rend. Acad. Sci. [Paris] 172: 992-994. 1921.

7249. BLUHM, AGNES. Alkohol und Nachkommenschaft. [Alcohol and Offspring.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 263-269; 28: 75-88. 1922.

7250. BLUHM, AGNES. Über einige Versuche, bei Säugetieren das Zahlenverhältnis der Geschlechter zu beeinflussen. [An attempt to influence the proportions of the sexes in mammals.] Arch. Rass.- u. Ges. Biol. 16: 1-28. 1924.—Treatment of male white mice with certain drugs (alcohol, Yohimbin "Spiegel" and caffen) raised the ratio of males among the new born offspring, while similar treatment of females was without effect on the sex ratio. This change in sex ratio in the offspring is believed to have been brought about by a differential effect on the movement of the ♂ and ♀ determining spermatozoa. The author states that

this result supports the "Correns heterohomogametic hypothesis" that there are 2 types of spermatozoa which differ in capacity for movement, and that sex is determined by the spermatozoa.—*H. H. Plough.*

7251. BOETTGER, CAESAR R. Über freilebende Hybriden der Landschnecken *Cepaea nemoralis* L. und *Cepaea hortensis* Müll. [Natural hybrids of the land snails, *Cepaea nemoralis* and *Cepaea hortensis*.] Zool. Jahrb. 44: 297-336. 1921.

7252. BOLDRINI, MARCELLO. Nuovi contributi alle ricerche sull' azione dell' ordine di nascita. [New contributions to the study of the influence of the order of birth.] Metron 1: 42-47. 1920.

7253. BONHOTE, J. LEWIS. Subspecies and their part in evolution. Ibis 3: 720-725. 1921.

7254. BONNIER, GERT. Double sex-linked lethals in *Drosophila melanogaster*. Acta Zool. 3: 135-152. 1922.

7255. BÖÖS, GEORG. Der experimentelle Nachweis der Parthenogenese in der Gruppe *Aphanes* der Gattung *Alchemilla*. [Experimental demonstration of parthenogenesis in the *Aphanes* group of the genus *Alchemilla*.] Bot. Notiser 1920: 145-150. 2 fig. 1920.

7256. BRECHER, LEONORE. Die Puppenfärbungen des Kohnweisslings, *Pieris brassicae* L. V. Kontrollversuche zur spezifischen Wirkung der Spektralbezirke mit anderen Faktoren. [The pupa coloration of the cabbage butterfly. V. Control experiments on the specific effect of the regions of the spectrum with other factors of color adaptation.] Arch. Entwicklungsmechan. 48: 1-45. 1921.

7257. BRECHER, LEONORE, UND FERDINAND WINKLER. Übereinstimmung positiver und negativer Dopareaktionen an Gefrierschnitten mit jenen an Extrakten. (Zugleich: Ursachen tierischer Farbkleidung, X.) [The agreement of positive and negative Dopa reactions on frozen sections with those of extracts. (Conjointly: Causes of animal colorings, X.)] Arch. Mikrosk. Anat. 104: 659-662. 1925.

7258. BREITENBECHER, J. K. The inheritance of sex-limited bilateral asymmetry in *Bruchus*. Genetics 10: 261-277. 1925.—Wildtype ♀ has 2 black spots on each elytron, the wild-type ♂ has no spots. The mutant piebald ♀ has 2 black spots on 1 elytron, 2 red spots on the other, either color on either wing. A single ♀ produces both types in equal numbers. Spots vary in size. Piebald ♂ show no spots. The piebald character is recessive. The insect is normally symmetrical in external traits. The author postulates a delicately adjusting mechanism shifting asymmetry right or left according to chance.—*Anna R. Whiting.*

7259. BRIDGES, CALVIN B. The origin of variations in sexual and sex-limited characters. Amer. Nat. 56: 51-63. 7 fig. 1922.

7260. BRIDGES, C. B., AND E. G. ANDERSON. Crossing over in the X chromosomes of triploid females in *Drosophila melanogaster*. Genetics 10: 418-440. 1925.

7261. BRINK, R. A. Mendelian ratios and the gametophyte generation in angiosperms. Genetics 10: 359-394. 2 fig. 1925.—Of 62 embryo sacs in maize plants heterozygous for the waxy factor, 25 were shown by microchemical tests to contain starch grains; 20 contained waxy grains; 12 contained neither, and 5 were doubtful. It is concluded that the macrogametophytes show the effect of the segregation of the waxy and non-waxy factors in sporogenesis, as had previously been shown to be true of the microgametophytes. Reciprocal crosses were made between plants respectively heterozygous and homozygous for the waxy factor. When the heterozygote is the pistillate parent, the proportion of seed formed with waxy and with non-waxy endosperm agrees closely with the Mendelian expectation; but when the heterozygote is the staminate parent, a significantly smaller proportion of waxy seed is formed. In the latter case, the distributions on the respective ears do not seem to form a homogeneous group. This fact, taken with preliminary results obtained from a different stock, is taken as indicating that additional genes may operate with the waxy-non-waxy pair to affect the rate of pollen-tube growth. Plants homozygous for "sugary" and heterozygous for "waxy" produced, on self-pollination, 18.8% waxy grains—6.2% less than expected on the Mendelian basis. It is thought probable that the sugary gene in the homozygous condition tends to increase the difference in rate of growth between waxy and non-waxy pollen tubes. In a strain heterozygous for "waxy," close-pollination of ears with especially long silks re-

sulted in a greater deficiency of waxy seed than did close-pollination of ears with short silks. This is to be expected if the deficiency is due to a differential rate of pollen-tube growth. Exposure of pollen to ultra-violet light produced no certainly differential effect upon waxy as compared with non-waxy pollen. Desiccation by exposure to CaCl_2 however, showed a probably significantly greater injurious effect upon waxy than upon non-waxy pollen. Any gene that restricts pollen-tube growth will, other things being equal, tend to eliminate itself from the race. This is probably, in part, the explanation for the apparent fewness of hereditary factors producing differential pollen-tube growth. Such factors as do cause such differential growth are probably mainly among those that affect carbohydrate transformations.—*C. E. Allen*.

7262. BROWNING, WILLIAM. Medical heredity. Distinguished children of physicians (United States, to 1910). xii + 250 p. Norman, Remington Co.: Baltimore, 1925.—This work deals with various aspects of the genealogy of physicians, some 6,500 names with personal data being listed. These include the physician parents and their distinguished children, the latter classified under the subjects in which they became distinguished, such as fine arts: (1) painting, sculpture, etc.; (2) music; (3) histrionic art—acting. The general subjects with their subdivisions, in addition to fine arts, are: Industries, commerce, sociology, education, literature, journalism, theology, medical practice, public life (law and politics), military, adventure, public medicine, engineering, science, and miscellaneous. Part III is a review and commentary on the preceding mass of genealogical data. The subjects discussed are: Proportion of physicians' children among persons of distinction; Age of father at birth of child; The preferences of women; and Inheritance of profession.—The work is indexed in great detail.—*Orland E. White*.

7263. BROŽEK, A. Přehled hlavních výsledků pěstitelských na rostlině *Mimulus* (fam. Scrophulariaceae). Veda Prirodni 3: 1-17. 1923.—The author has succeeded in finding among the descendants of *Mimulus tigrinoides* some individuals with a paracorolla. He has obtained by selection and by selfing, a constant race, *Mimulus tigrinoides flore pleno*. The hybrids *M. tigrinoides fl. pl.* \times *M. quinquevulnerus-rubinus* have simple flowers, the form *M. tigrinoides* var. *paulina*. The paracorolla appears again in the F_2 (15 s. : 1 fl. pl.). The form *flore pleno* cannot exist in nature but, by hybridization, individuals with paracorolla more or less developed can be obtained.—*Courtesy of Preslia (trans. by Mary Ellen Peck)*.

7264. BRÜEL, L. Artbildungs- und Variabilitätsstudien am Nervensystem von *Firoloida kowalevskyi* Vayss (desmaresti). [Studies on mutation and variation in the nervous system of *Firoloida kowalevskyi* Vayss (desmaresti).] Zool. Jahrb. 38: 517-564. 1921.

7265. BRUNSWIK, H. Untersuchungen über die Geschlechts- und Kernverhältnisse bei der Hymenomycetengattung *Coprinus*. [Investigations on sex and nuclear relations in the hymenomycete genus *Coprinus*.] Botanische Abhandlungen. Heft 5. 152 p., 3 fig. Gustav Fischer: Jena, 1924.

7266. BRYN, HALFDAN. Arvelighedsundersøkelser. Om arv. av øienfarven hos menns-sker. [Inheritance of eye color in man.] Tidsskr. Norske Laegeforening 40: 329-342. 1920.

7267. BRYN, HALFDAN. Arvelighedsundersøkelser vedrørende index cephalicus. [Genetic studies on index cephalicus.] Tidsskr. Norske Laegeforening 41: 441-452. 1921.

7268. BUCHACKER, WILHELM. Ein Beitrag zur Frage der Geschlechtsbildung. [Contribution to the question of sex-determination.] Zentrabl. Gynäkol. 44: 1345-1348. 1920.

7269. BURLINGAME, LEONAS L. Variation and heredity in *Lupinus*. Amer. Nat. 55: 427-448. 3 fig. 1921.

7270. BURT, D. R. R. The head and foot of *Pelmatohydra oligactis* Pall. as unipotent systems. Arch. Mikrosk. Anat. 104: 421-431. Pl. 2, 5 fig. 1925.

7271. BUSSE. Welchen Einfluss übt das Alter der Mutterkiefer auf die Nachkommen-schaft? [Influence of age of mother pine trees upon the progeny.] Zeitschr. Forst.- u. Jagdw. 57: 4-6. 1925.

7272. COHN, ERICH. A study of fertility in certain varieties of common wheat with respect to anther length and amount of pollen in parents and offspring. Jour. Amer. Soc. Agron. 17: 591-595. 1925.—Length of anthers seems to be correlated with pollen-bearing capacity. If a relation exists between fertilization of florets and pollen-bearing capacity, it can be used as a basis for selection.—*F. M. Schertz*.

7273. CALKINS, GARY N. *Uroleptus mobilis* Engelm. IV. Effect of cutting during conjugation. Jour. Exp. Zool. 34: 449-470. 10 fig. 1921.

7274. CARDON, P. V. Sunflower studies. 1. Variation in the "mammoth Russian" variety. Jour. Amer. Soc. Agron 14: 69-72. 3 pl. 1922.

7275. CARRIÈRE, REINHARD. Über erbliche Ohrformen, insbesondere das angewachsene Ohrläppchen. [Hereditary earform, especially the aduate ear lobe.] Zeitschr. Indukt. Abstamm.- u. Vererb. 28: 238-242. 1922.

7276. CASTLE, W. E. Genetics of the "Chinchilla" rabbit. Science 53: 387-388. 1921.

7277. CASTLE, W. E. Genetics of the Vienna white rabbit. Science 55: 269-270. 1922.

7278. CASTLE, W. E. Linked genes in rabbits. Science 52: 156-157. 1920.

7279. CASTLE, W. E. More linked genes in rabbits. Science 54: 634-636. 1921.

7280. CASTLE, W. E. Some new books on genetics. Sci. 62: 567-569. 1925.

7281. CASTLE, W. E. The measurement of linkage. Amer. Nat. 54: 264-267. 1920.

7282. CHAMPY, CH. Sur le déterminisme des caractères sexuels chez les tritons. [Determination of sexual characters in tritons.] Compt. Rend. Acad. Sci. [Paris] 174: 192-194. 1922.

7283. CHICKERING, A. M. The accessory chromosome of *Anasa tritis* again. Trans. Amer. Microsc. Soc. 40: 182-186. 1921.

7284. CHITTENDEN, R. J. Studies in variegation. II. *Hydrangea* and *Pelargonium*; with notes on certain chimerical arrangements which involve sterility. Jour. Genetics 16: 43-62. 5 pl. 1925.—This paper summarizes the work on genetics of variegated plants done at John Innes Horticultural Institution since 1910. Three types of variegation were noted in *Hydrangea hortensis*. (a) Green margin, white center. This is ♂ sterile but crossed with green ♂ gives green seedlings. (b) White over green periclinal with solid green lobes; crossed with green ♂ gave 2 white: 6 green seedlings. Reciprocal gave green only. (c) Like (b) but pale yellow lobes; crossed with green ♂ gives yellow and white non-viable seedlings. Reciprocal gave green only. In *Hydrangea* no variegated seedlings were found. The seedlings reproduced only types composing the leaf margin of the ♀ in proportions similar to that found on the branch from which seed was taken. Three types of tissue have been noted in zonal *Pelargoniums*: (a) green of different depths, (b) yellow of different depths, probably due to presence or absence of a bleaching factor; (c) white, which may be silvery white through life or yellow at first and white later or irrovated with green. Neither white can live alone. Either yellow or white may occur in several periclinal combinations with green. All three were found combined only in Golden Brilliantissima. This is white over green with yellow marginal lobes. No yellow with white was found in sectorial combination. Three types are discussed in detail; (a) *Freak of Nature*, (b) *Happy Thought*, and (c) *Golden Brilliantissima*. Several variations of sterility in different chimerical combinations are described. These are: (a) *Freak of Nature*; (b) some white-over-green types which set seed easily, one (Madame Salleron) which has no flowers; and (c) white branches. Green plants may also have sex defects. Seedlings of sports from *Freak of Nature* were studied. Green selfed gave green; white, selfed white; green × white gave green, variegated, and white; the reciprocal, only a few green and variegated seedlings. Variegation in the cotyledon is not necessarily an index to later variegation. No periclinal seedlings appeared. Some sectorials were found. These often outgrow their chimerical condition, giving rise to uniform tissue or periclinal condition. It is noted that the 2 external layers lack chlorophyll in all *Pelargoniums*. In white-over-green types the 2nd layer is traceable into the white sub-epidermal layer; in green-over-whites, into the green sub-epidermis. White stems are due to the absence of chlorophyll in the 2nd layer in green-over-white types. Details of arrangement of tissues are given in 2 types of green, green-over-white, white-over-green, aurea-over-green and other periclinals. While Noack's theory of the origin of periclinal chimeras as a result of changes in "latent labile genes" in the apical meristems of leaves cannot be disproved for typical or normal periclinals, the author presents evidence based on sectorials and exceptional periclinals showing that the theory that 3 layers are involved is the more probable one. Transmission in both *Hydrangea* and *Pelargonium* is due to plastid distribution. The occurrence of variegated seedlings in the latter favors the theory that plastids are transmitted through the pollen. In *Hydrangea* the inheritance of plastids appears to be purely maternal.—Margaret M. Lesley.

7285. CHODAT, R. Genetics in the crossing of poultry. *Compt. Rend. Soc. Phys. Hist. Nat. Genève* 38: 17-21. 1921.

7286. CHRISTOPH, KARI. Untersuchungen an *Trifolium pratense* L. und *Medicago sativa* L. Ein Beitrag zu den Grundlagen der Futterpflanzenzüchtung. [Investigations on *T. pratense* and *M. sativa*. A contribution to the principles of fodder plant breeding.] *Zeitschr. Pflanzenzücht.* 11: 23-40. 1925.

7287. CHURCH, A. H. Reproductive mechanism in land flora. II. Life cycles. *Jour. Bot.* 63: 78-85, 193-198. 1925.

7288. CLAUSEN, R. E., AND T. H. GOODSPEED. Interspecific hybridization in *Nicotiana*. II. A tetraploid *glutinosa-tabacum* hybrid, an experimental verification of Winge's hypothesis. *Genetics* 10: 278-284. 6 fig. 1925.

7289. COLE, L. J. Inheritance of milk and meat production in cattle. *Wisconsin Agric. Exp. Sta. Bull.* 319. 53-54. 1920.

7290. COLLIER, W. A. Einführung in die Variationsstatistik, mit besonderer Berücksichtigung der Biologie. [Introduction to the statistical study of variation with special regard to biology.] 72 p., 8 fig. J. Springer: Berlin, 1921.

7291. COLLINS, E. J. The genetics of sex in *Funaria hygrometrica*. *Proc. Roy. Soc. London B* 91: 369-370. 1920.

7292. COLTON, HAROLD SELLERS. Variation in the dog whelk, *Thais* (*Purpura* act.) *Lapillus*. *Ecology* 3: 146-157. 6 fig. 1922.

7293. CONKLIN, EDWIN GRANT. Has human evolution come to an end? Princeton Univ. (U. S. A.) Lectures. 1920.

7294. CONKLIN, EDWIN G. Heredity and environment. 4th ed., xvi + 379 p., 104 fig. Princeton University Press: Princeton, New Jersey, 1922.

7295. CONNORS, C. H. Peach breeding, technical phase. *New Jersey Agric. Exp. Sta., Ann. Rept.* 45: 70-73. 1924 [1925].—A note on the peach breeding work is given, with a description of the new seedlings. Further evidence was obtained to show the ♂ sterility of the J. H. Hale peach.—Wm. H. Martin.

7296. CORRENS, C. Carl Correns gesammelte Abhandlungen zur Vererbungswissenschaft aus periodischen Schriften 1899-1924. [Carl Correns' collected papers on genetics from periodicals, 1899-1924.] 1299 p., 128 fig., 4 pl. J. Springer: Berlin, 1924.

7297. CORRENS, C. Zahlen- und Gewichtsverhältnisse bei einigen heterostylen Pflanzen. [Numerical and weight relations in heterostyled plants.] *Biol. Zentralbl.* 41: 97-109. 1921.

7298. CORRENS, C. Zweite Fortsetzung der Versuche zur experimentellen Verschiebung der Geschlechtsverhältnisse. [Second continuation of the attempt to experimentally shift the sex ratio.] *Sitzungsber. Preuss. Akad. Wiss. Berlin* 1921: 330-354. 1921.

7299. COURRIER, R. Sur le déterminisme des caractères sexuels secondaires chez les Arthropodes. [Determination of secondary sexual characters in Arthropods.] *Compt. Rend. Acad. Sci. [Paris]* 175: 663-671. 1921.

7300. CRAMPTON, HENRY E. On the differential effects of the influenza epidemic among native peoples of the Pacific Islands. *Science* 55: 90-92. 1922.

7301. CRAMPTON, HENRY E. The coincident production of dextral and sinistral young in the land-gastropod *Partula*. *Science* 59: 558-559. 1924.—In conformity with Sturtevant's theory that direction of coiling depends upon the genetic composition of the mother, not of the individual itself, Crampton points to studies of Mayor and to his own, in which all offspring of a given snail turned in the same direction, though this direction was not infrequently different from that shown by the mother. The total number of their conformable cases is over 3000. Crampton has now, however, found 5 exceptions, all from 1 species, *P. suturalis*, from 1 locality. In each of these cases there were 2 offspring, 1 dextral, the other sinistral. In addition, mixed colonies (containing both types of individuals) of this species yielded 1,133 cases in which there were 2 or more young, all like their mother, and 184 cases of 2 or more, all unlike their mother in coiling. The conclusion is drawn that there are unusual circumstances under which factors additional to those in Sturtevant's theory may operate so as to produce other than the expected results.—H. J. Muller.

7302. CRANDALL, C. S. Results from self-pollination of apple flowers. *Proc. Amer. Soc. Hort. Sci.* 1921: 95-100. 1921.

7303. CRANE, M. B. Self-sterility and cross-incompatibility in plums and cherries. *Jour. Genetics* 15: 301-322. 6 pl. 1925.—Further studies on the sterility behavior of sweet cherries confirm the results previously reported. (See Bot. Absts. 13, Entry 1556.) Black Eagle has been found to belong to Group I, and Guigne de Winkler to Group II. Group I now includes 6 varieties, Group II 3 varieties and Group III 2 varieties. All varieties of sweet cherries thus far tested have proved to be self-sterile. When pollinated by varieties of *Prunus avium* they set fruit freely, but the reciprocal crosses gave fewer fruits. Experiments with plums show that the different varieties may be either self-sterile, partially self-fertile or completely self-fertile. The self-sterile varieties thus far tested fall into 4 sterility groups. Three varieties were found which were sterile as females with the other members of their groups, but fertile as males. One such variety was Seedling 1024, belonging to Group I. It is assumed that the other varieties of Group I are homozygous for the sterility factor (*AA*), while Seedling 1024 is heterozygous (*Aa*). A number of flowers were pollinated at various ages. Maximum setting occurred in flowers pollinated 6 days after opening. Absolute failure to set did not occur until the 14th day. Histological studies show that even after 12 days, pollen-tubes from incompatible crosses fail to penetrate to the lower half of the style.—A. J. Mangelsdorf.

7304. CRESPO, VICENTE. Mejoramiento de las plantas cultivadas. [Improvement of cultivated crops.] *Bol. Agric. Téc. y Econ. [España]* 12: 260-265. 1920.

7305. CREW, F. A. E. Animal genetics, an introduction to the science of animal breeding. xx + 420 p., 67 fig. Oliver and Boyd: Edinburgh, 1925.—This book is at once a textbook of genetics addressed to students of genetics and to animal breeders, and a monograph on sex determination and sex differentiation in animals. The subjects covered are: Mendelism; cytological basis of inheritance; linkage and the chromosome theory; sex differentiation; the sex ratio and the determination of sex; hormonal rejuvenation; inbreeding and outbreeding; genetic aspects of fecundity, fertility, and disease; disputed breeders' beliefs, such as telegony and the inheritance of acquired characters. The chief new contributions are in the discussion of sex and related questions, in which the attempt is made to reconcile the facts of cytology (chromosome mechanism) with those from physiological studies of sex differentiation and development. There is a bibliography of nearly 60 pages, and brief indices of authors and subjects.—L. C. Dunn.

7306. CREW, F. A. E. Sex-determination. *Nature* 115: 574-577. 1925.—This is a brief review of the chromosome mechanism of sex determination in animals and its relation to sex-differentiation or the assumption of ♂ and ♀ primary and secondary sexual characters. The latter generally are conditioned by the gonads, which are the first of the sexual structures to become differentiated, while these in turn are determined (1) by the chromosome composition of the tissues; and (2) by the relative effectiveness at the period of differentiation of the ♂ and ♀ differentiating substances elaborated by the ♂ and ♀ genetic factors, acting on a fundamentally ambivalent gonad in its indifferent stage. "The genotypic ♂ develops testes because he is a genotypic ♂; he becomes a phenotypic ♂ because he has developed testes." Intersexuality and sex-reversal are explained as due to disturbances either internal or externally induced in the developmental rate and time relations of ♂ and ♀ differentiating substances, or to disharmony in the sex determining gene complex itself.—L. C. Dunn.

7307. CROSS, W. E. La seleccion de la cana de azucar. [Selection of sugar cane.] *Hacienda* 19: 301-303. 1924.

7308. CUNNINGHAM, J. T. The hormone theory of heredity. *Nature* 109: 343. 1922.—(See also Bot. Absts. 11, Entry 2439; 12, Entry 6330.)

7309. CURJEL, DAGMAR F. The reproductive life of Indian women. *Indian Jour. Med. Res.* 8: 366-371. 1920.

7310. CZAJA, A. TH. Über Befruchtung, Bastardierung und Geschlechtertrennung bei Prothallien homosporer Farne. [Fertilization, hybridization and separation of the sexes in the prothallia of homosporous ferns.] *Zeitschr. Bot.* 13: 545-589. 1921.

7311. DAHLGREN, K. V. OSSIAN Die reziproken Bastarde zwischen *Geranium bohemicum* L. und seiner Unterart *deprehensum* Erik Alm. Verbreitung von und frühere versuche mit *Geranium deprehensum*. [Reciprocal hybrids between *Geranium bohemicum* L. and its

sub-species *deprehensum* Erik Alm. Distribution of and earlier experiments with *G. depressum*.] *Hereditas* 6: 237-256. 15 fig. 1925.—These 2 forms, both green, give variegated hybrids when crossed. The combination *G. bohemicum* \times *deprehensum* has large areas of white and small areas of green, and soon dies. The reciprocal hybrid, *deprehensum* \times *bohemicum*, has smaller spots of white and larger areas of green. It is suggested that the plastids of *G. bohemicum* are unable to function in cells with hybrid nuclear constitution. When plastids of *G. bohemicum* are introduced with the egg and are relatively numerous, the hybrid is highly variegated. When plastids of *G. bohemicum* are introduced by the pollen, and are relatively few, the hybrid plants are only slightly spotted.—*P. C. Mangelsdorf*.

7312. DAHLGREN, K. V. OSSIAN. Vererbung der heterostylie bei *Fagopyrum* (nebst einigen notizen über *Pulmonaria*). [Inheritance of heterostyly in *Fagopyrum* (with some notes on *Pulmonaria*.] *Hereditas* 3: 91-99. 1922.

7313. DAHLGREN, K. V. OSSIAN. Vererbungsversuche mit einer buntblättrigen *Barbarea vulgaris*. [Inheritance studies with a variegated *Barbarea vulgaris*.] *Hereditas* 2: 88-98. 6 fig. 1921.

7314. DARLOW, A. E. Inheritance of characters in sheep. *Oklahoma Agric. Exp. Sta. Bull.* 153: 1-15. 1925.

7315. DAVENPORT C. B. General statement, Department of Genetics. *Carnegie Inst. Washington* [D. C.] Year Book 24: 21-50. 2 fig. 1925.—Detailed reports are given on current investigations of the germ plasm, including *Datura* and other spermatophytes, hyacinths, *Uvularia*, *Diptera* (*Sciara*, *Drosophila virilis*), experimental modification of the germ-plasm, sex differential, sex studies in pigeons, mammals, *Cladocera*, genetics of albinism in maize, variegation in *Delphinium*, genetics of the thoroughbred horse, twinning in sheep, human genetics, and physiology of reproduction and development.—*Frederick V. Rand*.

7316. DAVENPORT, CHARLES B. Notes on physical anthropology of Australian aborigines and black-white hybrids. *Amer. Jour. Phys. Anthropol.* 8: 73-94. 1925.—Measurements were made by the author at Brewarrina, New South Wales on 6 ♂ and 7 ♀ full blooded Australian aborigines and 7 F₁ hybrids between aborigines and whites; also on about 34 other mixed bloods. The full-bloods are characterized by exceptionally low sitting height, due to their great relative leg length. The relative span is not as extreme as the relative leg length. The relative leg length is not exceeded by any other living race of mankind. The head is extraordinarily dolicocephalic, in this respect resembling the New Guinea and Caroline Islanders and Neanderthal man. The relative chest girth is low but higher in the full bloods than in the half breeds. Legs and arms are relatively slender. Skin color is darker than natives of Jamaica and Bermuda. There is great variability in skin color which has been interpreted by others as indicating 2 races of aborigines, one resembling the Papuans and the other the Malays. The eye color is dark brown and the hair is also dark brown or black. The hair is prevailingly wavy, though straight and curly hair occur. In the hybrids, dark hair and eye color dominate. The skin color is like that of negro mulattoes but with less yellow than in mulattoes. Arms and legs are relatively short and relative chest girth and shoulder girth small.—*Author*.

7317. DAVENPORT, C. B., AND LOUISE A. NELSON. Heredity and culture as factors in body build. *Pub. Health Rept.* 1053. 1-5. 1925.—An analysis is made of data collected from about 100 families in Maryland in each of which there were secured for as many members of the families as possible measurements of height, chest girth, weight, feeding and exercising habits and scholastic standing. The index of build selected was the relative chest girth: 5 grades for nutrition and for activity were chosen. The difference between the grade of activity and the grade of nutrition is called nutritional residual. The correlation between nutritional residual and build was calculated and found to be 0.335. It appears, then that deviation from average build and nutritional residual are only about $\frac{1}{3}$ correlated; part of the remaining $\frac{2}{3}$ clearly depend upon constitutional factors. The constitutional factors may be regarded as not less important in determining abnormalities of build than the cultural factors.—*Author*.

7318. DAVIS, B. M. The behavior of *Oenothera neo-Lamarckiana* in selfed line through seven generations. *Proc. Amer. Philosoph. Soc.* 63: 239-278. 9 fig. 1924.—A history of

the origin and breeding behavior of *O. neo-lamarckiana* in selfed line and in crosses is given. The plant is so named because of the fact that it resembles *lamarckiana* both taxonomically and genetically in most of its features. Like *lamarckiana*, it is obviously an impure species, but differs in that it splits, when selfed, into 2 main types—itsself, and a *franciscana* type. This behavior is correlated with the fact that it has a seed fertility of about 90%, as opposed to *lamarckiana* with about 35%. *Neo-lamarckiana* yields certain variants, some of which are more frequently met with than others, and some of which parallel to a certain degree mutants of *lamarckiana*. These may be considered comparable to the mutants of the latter species. Some of the variants breed true, and are probably close to homozygous. Others are heterozygous, among them the 21-chromosome form *hero*. The pollen of *neo-lamarckiana* has about 50% of shrivelled grains, as has *lamarckiana*. These experiments illustrate how an obviously impure species may arise.—*Ralph E. Cleland*.

7319. DAWSON, E. R. The causation of sex in man: A new theory of sex based on clinical materials, together with chapters on forecasting or predicting the sex of the unborn child, and on the determination or production of either sex at will. 3rd ed. xii + 226 p. H. K. Lewis and Co., Ltd.: London, 1921.

7320. DEHORNE, ARMAND. Le mécanisme de la métaphase et de l'anaphase somatiques et ses conséquences chez *Corethra plumicornis*. [The mechanism of the somatic metaphase and anaphase and its consequences in *Corethra plumicornis*.] Compt. Rend. Acad. Sci. [Paris] 172: 1684-1687. 1921.

7321. DEMOLL, R. Die Vererbbarkeit somatischer Erwerbungen. [Heritability of somatic acquisitions.] Arch. Entwicklungsmechan. Org. 443-451. 2 pl., 1 fig. 1921.

7322. DE WILDEMAN, E. Sur la transformation des fleurs hermaphrodites en fleurs mâles chez une plante cultivée du genre *Haemanthus* (L). [Transformation of hermaphroditic to male flower in a cultivated plant of *Haemanthus*.] Compt. Rend. Soc. Biol. 87: 113. 1922.

7323. DONCASTER, L. Heredity in the light of recent research. 3rd ed., x + 163 p., 13 fig. Cambridge Univ. Press: London, 1922.

7324. DORSEY, M. Some genetic phases of horticultural development. Proc. Amer. Soc. Hort. Sci. 21: 302-309. 1924.—The author gives a general survey of the progress of horticultural work and the bearing of present day genetic knowledge on its development. Weaknesses within some of the standard varieties, as well as possible improvement in varieties are noted.—*Richard Wellington*.

7325. DORSEY, M. J. The set of fruit in apple crosses. Proc. Amer. Soc. Hort. Sci. 1921: 82-94. 1921.

7326. DRAGHETTI, ALFONSO. Di alcuni casi di fecondazione incrociata spontanea del frumento. [Some cases of spontaneous crossing in wheat.] Staz. Sper. Agrarie Ital. 54: 417-424. 1921.

7327. DRZEWICKI, STEFAN. Sur le croisement entre les lézards *Lacerta agilis* L. forma typica et *Lacerta agilis* var. *erythronotus*. Fitzing. [A cross between the lizards *L. agilis* forma typica and *L. agilis* var. *erythronotus*.] Compt. Rend. Soc. Biol. 93: 1631-1632. 1925.

7328. DUCOMET, V. A propos des semis de pommes de terre. [Potato seedlings.] Prog. Agric. et Vitic. 75: 595-600. 1921.—The article reports results of potato breeding which has produced strains resistant to *Phytophthora*, strains with higher starch content and strains giving higher yields.—*E. L. Proebsting*.

7329. DURHAM, GEORGE B. Has parthenogenesis been confused with hermaphroditism in the Cucurbits? Zeitschr. Indukt. Abstamm.- u. Vererb. 37: 358-361. 1925.—Attempts to stimulate parthenogenesis in *Cucurbita* were unsuccessful, but parthenocarpy was occasionally found. Hermaphroditism is not uncommon, and may have been a factor in the results obtained by the Hagedoorns (See Bot. Absts. 14, Entry 3426). Hermaphroditic flowers in some cases produce a small proportion of abnormal pollen grains and abnormal seed. It is believed that these may be related to each other. The occurrence of hermaphroditism is somewhat influenced by external conditions.—*A. J. Mangelsdorf*.

7330. DÜRKEN, B. Die Vererbung der Augenfarbe beim Menschen. [Heredity of eye color in man.] Zeitschr. Indukt. Abstamm.- u. Vererb. 37: 67-81. 1925.—On the basis of 1 family (apparently not seen by the author) in which 1 blue-eyed and 2 brown-eyed children

are descended from a blue-eyed pair the author suggests a 3-factor basis for iris pigmentation, *B* (brown) and *F* (these 2 in different autosomes), also *W* (which, following Winge, is assigned to the sex chromosome).—*Charles B. Davenport.*

7331. [DUS-KRIATCHENKO, D. F.] Дузь-Крятченко, Д. Ф. О деятельности хондриозом в время развития пыльцевых зерен и выстилающих клеток в пыльниках *Lilium croceum* Chaix. [The activity of chondriosomes during the development of pollen grains and tapetal cells in the anthers of *Lilium croceum*.] (French summary.) Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sec. Sugartrust, Kiev] 8: 183-195. 1924.—There are, in the pollen mother cell, 2 kinds of chondriosomes: small granular mitochondria and large ring-shaped formations. In earlier stages of development the mitochondria are dispersed in the cell. When the tetrads develop they all gather on the periphery of the cell and pass through the plasm on the surface of the cells, giving later clavated outgrowths which cover the membrane of the pollen grain. The "rings" are filled with a substance which reduces osmium and is apparently a kind of fat. This fat disappears gradually at the maturity of the pollen grain and is replaced by starch. The same kind of chondriosome filled with fat is observed in tapetal cells; starch does not develop here. Drops of fat pass into the sporangial cavity and are absorbed by the pollen grain.—*S. Satina.*

7332. EAST, E. M. A study of partial sterility in certain hybrids. *Genetics* 6: 311-365. 17 fig. 1921.—A cross between *Nicotiana rustica* and *N. paniculata*, historically interesting as the 1st cross made and studied by Kölreuter, is here investigated intensively. Reciprocal crosses yield 1st-hybrid-generation populations that are practically identical and are as uniform in all characters as the parental populations. Not over 4% of the ovules or 0.1% of the possible pollen grains are functional. The F_2 generation is inordinately variable, far transgressing the limits of the grandparents. With the exception of 3 plants reproducing *N. paniculata*, of which 1 was dwarf, 2 sterile and 1 completely fertile, the F_2 plants approach closely to the species *N. rustica*. In fact, the 6 sub-species of *N. rustica* described by Comes were reproduced. Recombinations in fertility occurred, and types which might have been held to be of specific rank were obtained. These were all fertile with one another. The facts obtained are interpreted without assuming irregularities of chromosome division if (1) there is a group of chromosomes in each parent that cannot be replaced by chromosomes from the other parent; if (2) there is a group of chromosomes from each parent, a percentage of which may be replaced by chromosomes from the other parent, but where functional perfection of the gametes varies as their constitution approaches that of the parental forms; and if certain subsidiary assumptions are made. The bearing of this work on the evolution of cultivated plants is discussed.—*Author.*

7333. [ELĬASHUK, M.] Ельяшук, М. Влияние различной величины корня на урожай столовой моркови и свеклы. [Relation between size of roots and yield of seed of carrots and beets.] Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust, Kiev.] 8: 99-104. 1924.—Experiments showed that with the size of roots the production of seed increases so slightly that the author considers the planting of smaller roots for seed production as more economical.—*M. Demerec.*

7334. ELORDUY, SAMUEL TORRES. El arte y la ciencia de la selección de la semilla y la producción o creación de plantas puras. [The art and science of seed selection and the production or creation of pure lines.] *Rev. Agric. Mexico* 6: 333-337, 388-390. 7 fig. 1921.

7335. EMERSON, R. A., and STERLING H. EMERSON. Genetic interrelations of two andromonoecious types of maize, dwarf and anther ear. *Genetics* 7: 203-236. 6 fig. 1922.

7336. EMME, H. Beitrage zur cytologie der Gersten. [Contribution to the cytology of barley.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 37: 229-236. 9 fig. 1925.—The study undertakes to discover some chromosome differences between barleys of the Asiatic group and those of the African group. The author finds 13 varieties of barley having a satellite attached to 1 chromosome, and 3 varieties with satellites attached to 2 chromosomes. These satellites are constant characteristics of varieties in which they occur. Satellites occur in varieties of both the Asiatic and the African groups as well as in varieties intermediate in distribution. Varieties with 1 satellite frequently have a yoke mate without a satellite, but a 3rd expected form with 2 satellites was not found. The absence of such a form is possibly due to the presence of a lethal in the satellite, a double dose being fatal.—*A. E. Longley.*

7337. ENGLEDDOW, F. L. Inheritance in barley. II. The awn and the lateral floret. Jour. Agric Sci. 11: 159-196. 9 fig. 1921.
7338. ENGLEDDOW, F. L., AND J. B. HUTCHINSON. Inheritance in wheat. II. *T. turgidum* × *T. durum* crosses, with notes on the inheritance of solidness in straw. Jour. Genetics 16: 19-32. 2 fig. 1925.
7339. ENGLEDDOW, F. L., AND S. M. WADHAM. Inheritance in wheat. I. "Unfixable wheat." [Investigations of the late M. Philippe de Vilmorin's "Race de blé nain infixable."] Jour. Genetics 16: 1-18. 1 pl. 1925.
7340. ERDMANN, RHODA. Art und Artbildung bei Protisten. [Species and species formation in Protista.] Biol. Zentralbl. 42: 49-64. 8 fig. 1922.
7341. ERDMANN, RHODA. Art und Artbildung bei Protisten. [Species and species formation in Protista.] Zeitschr. Indukt Abstamm.- u. Vererb. 27: 242-243. 1922.
7342. ERDMANN, RHODA. Einige Gedanken über das Individual-Differential. [Some opinions on the individual differential.] Studia Mendeliana 1923: 254-265. 5 fig. Typos: Brünn, Czechoslovakia, 1923.
7343. ERHARD-FREDERIKSEN. [The improvement of field crops with special reference to the use of the diallel crossing method.] Tidsskr. Land. 7: 357-403. 1 pl., 5 fig. 1924.
7344. ERIKSSON, GÖSTA. Meine Rotkleezüchtungen. [My clover investigations.] Zeitschr. Pflanzenzucht. 10: 385-423. 10 fig. 1925.
7345. ERNST, A. Artkreuzungen in der Gattung *Primula*. [Species crosses in the genus *Primula*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 233-235. 1922.
7346. EVANG, KARL. The sex-linked mutants vesiculated and semi-lethal in *Drosophila melanogaster*. Zeitschr. indukt. Abstamm.- u. Vererb. 39: 165-183. 1 fig. 1925.
7347. EVANS, MORGAN E. Some methods of recording data in timothy breeding. Jour. Amer. Soc. Agron. 14: 62-69. 1922.
7348. [EVTUSHENKO, M.] ЕВТУШЕНКО, М. Вегетационный метод в огородничестве. [Vegetative method in horticulture.] Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 107-114. 1924.—Growth of tomatoes increased rapidly with increase in soil moisture between 20 and 40%. The highest yield of fruits was obtained at 60% moisture and of leaves at 80%. Onions did not grow at 20% moisture. The highest yield was obtained at 100% moisture and highest yield of leaves at 80%. The highest yield of roots of sugar beets was obtained at 80% moisture and of carrots at 100% moisture; highest yield of seed was obtained in sugar beets at 60% moisture and in carrots at 100%. Growth of carrots and yield of the seed was better at 60% moisture than at 40% when different fertilizers were used (except potassium, which gave the smallest yield). The highest yield at 40% of moisture was obtained from plot with phosphorus, and the highest yield at 60% of moisture was obtained from plot with manure and phosphorus.—*M. Demerec*.
7349. FABRY, PAUL. A propos du *Bacterium coli* "modifié" ne fabriquant plus d'indol. [Modified *Bacterium coli* no longer producing indol.] Compt. Rend. Soc. Biol. 86: 517-518. 1922.
7350. FASOLD, ANNA. Studien über Vererbung von Hautkrankheiten. VI. Xanthom (Cholesterosis cutis). [Studies on the inheritance of skin defects. VI. Xanthom (Cholesterosis cutis).] Arch. Rass.- u. Ges. Biol. 16: 54-66. 1924.
7351. FEHLINGER, H. Erbliche Krankheitsanlagen. [Hereditary tendency to disease.] Naturwissensch. Umschau 9: 49-51. 1920.
7352. FEIGE, ERNST. Über die korrelative Variabilität bei Haustieren. [Correlated variation in domestic animals.] Fühlings Landw. Zeitg. 70: 61-69. 1921.
7353. FEIGE, ERNST. Variationsstatistische Untersuchungen an Haustieren. [Biometrical studies on domestic animals.] Fühlings Landwirtschaft. Zeitg. 70: 259-271. 1921.
7354. FELDMAN, W. M. Biomathematics. xix + 398 p., 125 fig. Charles Griffin and Co.: London, 1923.—A summary is given of mathematical methods from the viewpoint of their application to biology. Abundant illustrations are given of actual applications in various fields of biology.—*Sewall Wright*.
7355. FELTIN, R. Die Vererbungstheorien des Mendelismus (cont.). [Genetic theories of Mendelianism.] Möllers Deutsch. Gartn. Zeitschr. 40: 403-404. 1925.

7356. FETSCHER, R. Erbbiologische Studien an Sexualverbrechern. [Inheritance studies on sex crimes.] Arch. Rass.- u. Ges. Biol. 17: 256-281. 1925.
7357. FICK, R. Bemerkungen zur "Vererbung erworbener Eigenschaften." [Remarks on "Inheritance of acquired characters."] Anat. Anzeiger 53: 475-479. 1920.
7358. FIGINI, PIETRO GUIDO. Intorno ai fiori di Ranunculus bulbosus L. e Ranunculus velutinus Ten. Osservazioni biometriche. [Biometrical observations on the flowers of R. bulbosus L. and R. velutinus.] Atti Reale Insti. Veneto Sci. 80: 151-171. 8 fig. 1921.
7359. FISCHER, FRANZ. Studien über Vererbung von Hautkrankheiten. VIII. [Studies on the inheritance of skin defects. VIII.] Arch. Rass.- u. Ges. Biol. 16: 404-411. 1925.
7360. FLEISCHMANN, RUDOLF. Ein Messgerät zur Bestimmung der Korndicke. [A criterion for determining cereal yields.] Zeitschr. Pflanzenzücht. 10: 466-468. 1 fig. 1925.
7361. FOX, H. MUNRO. Lunar periodicity in reproduction. Nature 109: 237-238. 1922.
7362. FRANCE, R. H. Mutation and evolution. Sci. Amer. 3: 400-401. 4 fig. 1921.
7363. FRANCOIS-DAINVILLE, E., ET R. LÉONARD. Brachydactylie avec ectrodactylie et syndactylie de la main gauche et des deux pieds. [Brachydactyly with ectrodactyly and syndactyly of the left hand and the two feet.] Bull. Mem. Soc. Anat. 92: 106-115. 2 fig. 1922.
7364. FRANZ, V. Zur Kennzeichnung der allgemeinen Entwicklungsrichtungen des Organismenreiches. [Characterization of general directions of evolution in organisms.] Zeitschr. Indukt. Abstamm.- u. Vererb. 36: 33-58. 1 fig. 1924.
7365. FRASER, G. Hybrid tea-rose Richmond \times Rosa nutkana. Agric. Jour. [British Columbia] 6: 174. 2 fig. 1921.
7366. FRASER, G. Rubus ursinus \times Loganberry. Agric. Jour. [British Columbia] 6: 213. 1 fig. 1921.
7367. FRASER, J. G. C. The dominant Mendelian characters in barley breeding. Sci. Agric. 2: 113-116. 1921.
7368. FREEMAN, GEORGE F. A progress report on cotton breeding at the Sultanic Agricultural Society. Sultanic Agric. Soc. Bull. 3. 1920.—A plan is given for plant selection which makes provision for securing enough select seed for field planting after 7 years of pedigree selection. Seed from each mother plant is sown in plots in which the rows are 100 cm. apart and the plants 100 cm. apart in the rows. Every other inter-row space is left for a path, the other containing an irrigation furrow. The characteristics which are observed in the field are (1) boll shape (the bolls on the plant are compared with plaster models), (2) height, (3) diameter of the plant, (4) size of leaves, (5) size of bolls, (6) number of vegetative branches, (7) number of locules, (8) daily counts of the number of flowers during the season up to August 15. Further records are made in the laboratory as follows: (1) total weight of cotton, (2) weight of seed, (3) weight of lint, (4) length of lint, (5) average weight per boll, (6) percentage of lint, (7) weight of 100 seed, (8) number of seed per boll. Self-pollination is insured in the pedigree plots by placing small mosquito-net bags over the flower 1-2 days before they open, and leaving them there until the fruit has matured.—W. C. McQuiston.
7369. FRETZ, G. P. Erfelijkheid, correlatie en regressie. [Heredity, correlation and regression.] Genetica 3: 1-27. 12 fig. 1921.
7370. FREY, HANS C. Beitrag zur myotonischen Dystrophie. [Contribution on myotonic dystrophy.] Arch. Rass.- u. Ges. Biol. 17: 1-44. 1925.
7371. FRUWIRTH, C. Befruchtungsverhältnisse und Pflanzenzüchtung. [Conditions for pollinization and plant production.] Fühling's Landw. Zeitg. 70: 361-372. 1921.
7372. FRUWIRTH, C. Eine auffallende Linsen- Wickenbastardierung. [A striking case of lentil-vetch hybridization.] Genetica 5: 481-496. 1924.
7373. [FRUWIRTH, K.] Фрувирт, К. Некоторые данные о развитии семенного дела в бывшей Австро-Венгрии и некоторых сопредельных с нею странах. [Development of seed production in former Austro-Hungary and some adjacent countries.] Бюл. Сопт.-Сем. Управ. Сахаропрестра. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 11-26. 1924.—This is a review of the work done on seed production in Austria, Hungary, Czechoslovakia, Yugoslavia, Poland and Rumania. Experiment Stations and organizations which control the production of the seed are listed and the names of the persons responsible for the work are given.—M. Demerec.

7374. FRUWIRTH, KARL, AND THEODOR ROEMER. Einführung in die landwirtschaftliche Pflanzenzüchtung. [Introduction to agricultural plant breeding.] *Illus.* P. Parey: Berlin, 1923.

7375. FUJII, K. On the conceptions of id and the question of its transmutability. *Bot. Magazine Tokyo* 34: 99-125. 1920.

7376. FUNAOKA, SEIGO. Der anatomische Bau des Blattes des Bastardes *Mirabilis jalapa* L. \times *Mirabilis longiflora* L., verglichen mit den Elternpflanzen. [The anatomical constitution of hybrid leaves of *M. jalapa* \times *M. longiflora* compared with their parents.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 39: 288-292. 1925.

7377. FURMO, ALBERTO. Studio di genetica e di clinica spora cinque casi di eunucoidismo eredo-familiare. [Study of the genetics and clinical nature of five cases of familial eunucoidism.] *Riv. Patol. Nerv. e Ment.* 26: 245-260. 4 fig. 1921.

7378. G., M. Human biometrics. [Rev. of: PEARL, RAYMOND. *Studies in human biology.* 653 p. Williams & Wilkins Co.: Baltimore; Baillière, Tindall & Co.: London, 1924.] *Nature* 115: 671-672. 1925.

7379. GAMS, H. Beiträge zur Geschichte der *quercus sessiliflora* Salisbury. [Contribution to the history of *Q. sessiliflora*.] *Genetica* 6: 464-468. 5 fig. 1924.—The author presents evidence from fossil material, the present day range and climatic requirements, morphologic characters and the hybrid nature of *Quercus sessiliflora* to establish its phylogenetic relationship especially to *Q. pubescens* and *Q. robur*. The evidence presented suggests that *Q. sessiliflora* is the product of a cross between *Q. pubescens* and *Q. robur*.—*J. L. Collins.*

7380. GATENBY, J. BRONTÉ, AND MARIE C. STOPES. Spermatogenesis of spiders. *Nature* 116: 499. 1925.—Studies on spermatogenesis of spiders by Ernest Warren (*Nature* 116: 395-396) are pronounced by Gatenby to be interesting but unconvincing. He points out that the spermatogonial nucleus is polymorphic and lobulated, which in itself is no evidence of amitosis. Warren's figures suggest apyrene sperm formation or the degenerative changes found in many effete insect germ cells. Stopes questions Warren's supposition that the mechanism in spiders must be like that in other organisms. Spiders belong to a line of evolution remote from most living forms. This may be due to defectiveness of its mechanism, improved in later forms.—*Anna R. Whiting.*

7381. GATES, R. RUGGLES. Mutation. *Nature* 115: 499-500. 1925.

7382. GENIEYS, P. Sur le déterminisme des variations de la coloration chez un Hyménoptères parasite. [Determinism of the variations in coloration of a parasitic hymenopteran.] *Compt. Rend. Soc. Biol.* 86: 767-770. 2 fig. 1922.

7383. GERICKE, W. F. Relation between certain heritable properties of wheat and their capacity to increase protein content of grain. *Jour. Agric. Res.* 31: 67-70. 1925.

7384. GESSARD, M. C. Variétés de bacilles pyocyanoides. [Varieties of pyocyanoid bacilli.] *Compt. Rend. Acad. Sci. [Paris]* 174: 1301-1303. 1922.

7385. GHIGI, ALESSANDRO. Probabile inversione di dominanza coll'età in alcuni fagiani. [Probable reversal of dominance with age in pheasants.] *Riv. Biol.* 2: 591-596. 1920.

7386. GINI, CORRADO. La guerra dal punto di vista dell'eugenica. [War from the point of view of eugenics.] *Metron* 1: 92-122. 1921.

7387. GLEISBERG, W. Monstrositäten bei Radieskeimpflanzchen. [Monstrosities in radish seedlings.] *Gartenwelt* 29: 400. 3 fig. 1925.—Examples are given of occasional polyembryony in radish seed. In some seedlings the cotyledons are grown together. Others possess 3-4 cotyledons.—*J. C. Th. Uphof.*

7388. GOETSCH, W. Fortpflanzungserscheinungen an tierischen Chimären. [Reproduction phenomena in animal chimeras.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 33: 294-296. 1924.

7389. GOETSCH, W. Hermaphroditismus und Gonochorismus bei Hydrozoen. [Hermaphroditism and gonochorism in Hydrozoa.] *Zool. Anzeiger* 54: 6-18. 3 fig. 1922.

7390. GOLDSCHMIDT, RICHARD. Ein beitrage zur analyse der Doppelmissbildungen. [A contribution to the analysis of double malformations.] *Arch. Entwicklunmechan. Org.* 47: 654-667. 1921.

7391. GOLDSCHMIDT, RICHARD, UNTER MITARBEIT VON SEILER, J., UND H. POPPELBAUM.

Untersuchungen zur Genetik der geographischen Variation. I. [Investigation of the genetics of geographical distribution.] Arch. Mikroskop. Anat. 101: 92-336. 4 pl., 154 fig. 1924.

7392. GOLIŃSKA, J. Recherches sur la croissance des fruits et la fructification des concombres (*Cucumis sativus*). [Investigations on crossing of fruits and fruiting in cucumbers.] Acta Soc. Bot. Poloniae 3: 97-114. Illus. 1925.

7393. GONZALEZ, B. M. Experimental studies on the duration of life. VIII. The influence upon duration of life of certain mutant genes of *Drosophila melanogaster*. Amer. Nat. 57: 289-325. 1923.—Five mutants in the 2nd chromosome of *Drosophila* were used as indices for 5 distinct factors having definite effects on duration of life. It is shown that under constant environmental conditions, definite degrees of duration of life are associated with extreme precision with the presence or absence of certain genes in the chromosomes. These same genes also control morphological characters. The biometrical treatment allows of more precise insight into the interactions of different factors than does observation of morphological character, and also into sex differences.—H. H. Plough.

7394. GORINI, COST. Mutations physiologiques brusques chez les ferments lactiques par divergences individuelles. [Sudden physiological mutations by individual divergences in the lactic ferments.] Compt. Rend. Acad. Sci. [Paris] 172: 1382-1384. 1921.

7395. GORINI, COST. Über plötzliche physiologische Mutationen durch individuelle Abweichungen bei den Milchsäurebakterien. [Sudden physiological mutations through individual variations in lactic acid bacteria.] Centralbl. Bakt. [etc.] 55: 241-242. 1922.

7396. GOULD, CHARLES W. America, a family matter. 181 p. Charles Scribner's Sons: New York, 1920.

7397. GOWEN, JOHN W. Identical twins in cattle? Biol. Bull. 42: 1-6. 1922.

7398. GOWEN, JOHN W. Recent evolution in milk secretion of Guernsey cattle. Proc. Nat. Acad. Sci. [Washington, D. C.] 11: 696-701. 2 fig. 1925.—Uncorrected milk yield and butterfat percentage have not increased during the different periods of registration of Guernsey cattle. When corrected for age the records show a constant increase in milk production but no increase in butterfat percentage. This condition has been the result of the selection of better cattle as dams and to the increased knowledge of animal nutrition as related to milk production.—H. C. McPhee.

7399. GOWEN, JOHN W. Studies in milk secretion. XV. Guernsey sires' progeny performance for milk yield, butter-fat percentage, and butter-fat. Maine Agric. Exp. Sta. Bull. 324. 37-124. 6 fig. 1925.—This bulletin is the 1st of a series the purpose of which will be to make a thorough analysis of production in Guernsey cattle. In the bulletin are discussed the changes in production which have occurred in advanced registry Guernsey cattle from the beginning of advanced registry to the present time; the variation in milk yield and butterfat percentage at mature form; probable variation in the average production records of any sire's daughter; and average progeny performance in milk yield, butterfat percentage and butterfat for all sires having 2 or more daughters.—H. C. McPhee.

7400. GOWEN, JOHN W. Studies in milk secretion. XVI. Progeny performance of Guernsey sires' sons. Maine Agric. Exp. Sta. Bull. 327. 197-252. 3 fig. 1925.

7401. GRÄBNER, E. Die neuere Entwicklung der ungarischen Pflanzenzüchtung. [Recent development of Hungarian plant breeding.] Wiener Landw. Zeitg. 75: 418-420. 1925.

7402. GRANT, MADISON, ROBERT DE C. WARD, H. H. LAUGHLIN, CHARLES W. GOULD, LUCIEN HOWE, R. H. JOHNSON, FRANCIS H. KINNICUTT, AND JOHN B. TREVOR. Second and third report of the Sub-Committee on Selective Immigration of the Eugenics Committee of the United States of America. 17 p. Eugenics Soc. of U. S. A.: New Haven, 1925.

7403. GRÄPER, LUDWIG. Determination und Differenzierung. [Determination and differentiation.] Arch. Mikroskop. Anat. 98: 210-220. 1923.

7404. GRAVES, E. W. Is *Botrychium dissectum* a mutant? Amer. Fern. Jour. 13: 87-89. 1923.

7405. GRAVES, R. R. Heredity and production. Hoard's Dairyman 60: 785-798, 799. 1920.

7406. GRIFFEE, FRED, AND H. K. HAYES. Natural crossing in oats. Jour. Amer. Soc. Agron. 17: 545-549. 1925.—Black-grained varieties of oats were grown alternately with white-

grained varieties in order to study the amount of natural crossing at University Farm, St. Paul, Minnesota. Natural crossing in oats varied with the variety. The number of aberrant types which resulted from natural crosses ranged from 0.04% in Victory to 1.4% in Kanota.—*F. M. Schertz.*

7407. GRUSCHKA, THEODOR. Über Varianten des *Bacterium enteritidis* Gärtner. [Variants of *Bacterium enteritidis* Gärtner.] Wien Klin. Wochenschr. 33: 964-965. 1920.

7408. GSCHWENDTNER, L. Wirkt der moderne Sport rassenerhaltend und -ertüchtigend? [Does modern sport act to preserve and qualify the race?] Arch. Rass.- u. Ges. Biol. 17: 170-180. 1925.—Questionnaires were sent to athletes, of which 81 were filled out. On the whole, the replies were disappointing as to desire for children. The need of carefulness in mate-selection was generally recognized.—*Charles B. Davenport.*

7409. GUIDI, FERRUCCIO. Sulle atassie ereditarie a carattere familiare. [Hereditary ataxy of familial character.] Riv. Patol. Nerv. e Ment. 26: 245-260. 4 fig. 1921.

7410. GUTHRIE, JOHN D. A new leg mutant in *Drosophila melanogaster*. Amer. Nat. 59: 479-480. 1925.—A new mutant in *Drosophila melanogaster*, having shortened and thickened tarsal joints is described. It is called "thickened," and is located in the 2nd chromosome 6.2 units to the right of and 13.5 units to the left of vestigial. This is very close to purple.—*H. H. Plough.*

7411. GUTMANN, M. J. Zur Vererbung der Hammerzehe. [Inheritance of "hammer" toe.] Arch. Rass.- u. Ges. Biol. 17: 190. 1925.

7412. GUYER, M. F. Orthogenesis and serological phenomena. Amer. Nat. 56: 116-135. 1922.

7413. GUYER, M. F. Serological reactions as a probable cause of variations. Amer. Nat. 56: 80-96. 1922.

7414. HAECKER, VALENTIN. Aufgaben und Ergebnisse der Phänogenetik. [Problems and data of phenogenetics.] Bibliographia Genetica 1: 93-300. Martinus Nijhoff: The Hague, 1924.—The theme concerns the development of characters of the individual from their germinal representatives, the unit of inheritance, factor or gene. Emphasis is placed upon the manifestation of characters during embryological development. Inherited characters, unit characters and blending characters are considered to provide new fields in embryology. It is pointed out that embryology may explain the nature of characters which differentiate races, species, etc. Primitive types are revealed during embryological development. From this viewpoint the literature on the following topics is discussed: (1) Body size, (2) spirality and asymmetry, (3) pigmentation, (4) marking and other characters of skin structure, (5) head, skull and features, (6) extremities and tail, and (7) head appendages, etc. Future spheres of work in the field are pointed out.—*Horace W. Feldman.*

7415. HAECKER, VALENTIN. Über die Ursachen regelmässiger und unregelmässiger Vererbung. [The causes of regular and irregular inheritance.] Flugschr. Deutsch. Ges. Zücht. 50. 1-20. Berlin, 1920.

7416. HAECKER, VALENTIN. Über umkehrbare Prozesse in der organischen Welt. [Convertible processes in the organic world.] 39 p. Gebr. Borntraeger: Berlin, 1922.

7417. HAECKER, VALENTIN. Vererbung und Entwicklung der musikalischen Veranlagung [Heredity and development of the musical propensity.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 239-241. 1922.—(See also Bot. Absts. 13, Entry 888.)

7418. HAECKER, V., UND M. EISENTRAUT. Über das Vorkommen von Überkreuzungsfiguren ausserhalb der Diakinese. [Occurrence of crossing-over figures elsewhere than in diakinesis.] Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 321-323. 3 fig. 1925.—Previous reports are cited of the occurrence in somatic divisions in various organisms of split chromosomes in the form of double spirals closely resembling the twisted chromosome pairs characteristic of the heterotypic diakinesis, which latter play an important rôle in the discussion of a cytological basis for the interchromosomal exchange of genetic factors. Similar appearances are here described and figured as characteristic of the prophases of divisions in the spermatogonia and in the wall cells of the spermatocysts of *Oedipoda coerulescens* and *Gomphocerus maculatus*. It is suggested that in the appearance of a secondary longitudinal split, also, these chromosomes resemble heterotypic chromosome pairs.—*C. E. Allen.*

7419. HAECKER, V., UND TH. ZIEHEN. Über die musikalische Vererbung in der Descendenz von Robert Schumann. [Musical inheritance in the descendants of Robert Schumann.] Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 97-123. 1925.—Available information shows that musical talent was present to an unusual extent in the ancestry and descendants of Robert Schumann. Difficulties of determining criteria of musical talent are pointed out. The 2 alternatives—plus, representing an inheritance of factors for talent and minus representing one for lack of talent—are postulated. Heterozygous individuals may show talent, especially in eastern middle Germany. Entirely positive unions produce a maximum of 71% of talent. Robert Schumann may have been homozygous, but probably inherited his talent from his mother only. It is concluded that his ability to play well came from his mother; his ability as a composer was derived from his father.—*Horace W. Feldman*.

7420. HAECKER, V., UND TH. ZIEHEN. Zusatz zur Arbeit "Über die musikalische Vererbung in der Descendenz von Robert Schumann." [Supplement to the paper "Heredity of musical ability among the descendants of Robert Schumann."] Zeitschr. Indukt. Abstamm.- u. Vererb. 39: 293. 1925.

7421. HAINES, G. Investigations in animal genetics at the experiment stations. Work and Expend. Agric. Exp. Stations, 1924: 67-87 (References, p. 75-87). 1924.

7422. HALBAN, J. Keimdrüse und Geschlechtsentwicklung. [Germ glands and sex development.] Arch. Gynaekol. 114: 289-303. 1921.

7423. HALDANE, J. B. S. A mathematical theory of natural and artificial selection. Trans. Cambridge Phil. Soc. 23: 19-41. 1924.—Mathematical analyses are given of the consequences of various kinds of selection on the relative frequencies of types in the case of non-interbreeding competing organisms and random breeding populations in which the selected character is of various sorts (autosomal dominant or recessive, sexlinked, etc.). The author concludes that "selection of a given intensity is most effective when amphimixis does not affect the character selected, e.g., in complete inbreeding or homogamy. Selection is very ineffective on autosomal recessive characters as long as they are rare."—*Sewall Wright*.

7424. HALL, H. M. Statistical studies. Carnegie Inst. Washington Year Book. 19: 348. 1921.

7425. HALLQUIST, CARL. The inheritance of the flower colour and the seed colour in *Lupinus angustifolius*. Hereditas 2: 299-363. 2 fig. 1921.

7426. HAMMARLUND, C. Zur Genetik, Biologie und Physiologie einiger Erysiphaceen. [Genetics, biology, and physiology of some Erysiphaceae.] Hereditas 6: 1-126. 10 fig. 1925.—On the basis of extensive infection experiments, 26 specialized races of *Erysiphe communis* and 6 specialized races of *Phyllactinia guttata* are recognized. Conidia were used in the experiments with *Erysiphe*; ascospores, with *Phyllactinia*. Each race shows great constancy in adaptation. In moist air, *E. communis* bears more conidial chains than in dry air. In other members of the group which regularly produce chains of conidia, the average length of chain is greater in moist than in dry air. On the other hand, the total number of conidia produced per conidiophore is greater in dry than in moist air. Evidently the power to discharge the conidia is less in moist air, and thus longer chains are formed. The "energy of germination," calculated from the proportion of conidia germinating within 24 hours, is taken as a measure of "vitality." The "vitality" of conidia formed in dry air is greater than that of conidia formed in moist air. "Vitality" thus varies approximately as does the number of conidia formed per conidiophore and inversely as the number or length of chains. *E. graminis* differs from the other fungi investigated in being little affected by air moisture. Light and temperature also affect "vitality." Vitality is greater on a susceptible than on a resistant host.—The F_1 offspring of a cross between a susceptible and an immune plant of *Galeopsis tetrahit* were susceptible. The F_2 generation segregated in the proportion of 3 susceptible to 1 immune. The *Erysiphe labiatarum* displayed a greater vitality upon homozygous susceptible than upon heterozygous hosts. The F_2 generation from a cross between a susceptible and an immune plant of *Pisum sativum* consisted of 475 susceptible and 3 immune plants. The result is interpreted in terms of 4 factor-pairs affecting susceptibility. The F_2 offspring of a mating of a strongly and a weakly susceptible plant of *P. sativum* were classified according to the proportion of conidial chains produced when the plants were infected with *E. communis*.

"Vitality," measured by the germinating power of the conidia, varied inversely with the proportion of conidial chains, as in previous experiments. F_2 plants, compared with the P_1 as to degree of susceptibility, gave indications of a transgressive segregation. Results of infections and attempted infections of weakly susceptible hosts with fungous strains of varying vitality are taken to indicate that the resistance of a plant to a certain fungal genotype is inversely proportional to the vitality of the fungus.—*C. E. Allen.*

7427. HANIEL, CURT B. Variationsstudie an timoresischen Amphidromusarten. [Study on variation in species of *Amphidromus* on Timor Island (Dutch East Indies).] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 25: 1-88. 27 fig. 1921.

7428. HANSEN, SPØREN. Heredity in the case of dementia praecox and related diseases. *Hereditas* 3: 114-124. 1922.

7429. HARRIS, J. ARTHUR, W. F. KIRKPATRICK, AND A. F. BLAKESLEE. The prediction of annual egg production from the records of limited periods. *Proc. Nation. Acad. Sci.* [Washington, D. C.] 7: 213-219. 1921.

7430. HARTMANN, M. Befruchtung, Tod und Fortpflanzung. [Fertilization, death and reproduction.] *Süddeutsche Monatshefte. Fortsch. Lebensforsch.* 1921: 52-62. 1921.

7431. HARTMANN, M. The morphology and physiology of form-variation (development, reproduction, fertilization and heredity) of the Phytomonadineae (Volvocales). II. On the continuous, purely asexual, cultivation of *Eudorina elegans* and its significance for the problem of fertilization and death. *Bot. Centralbl.* 140: 108. 1919.

7432. HAWKES, ONERA A. MERRITT. Observations on the life-history, biology and genetics of the lady-bird beetle, *Adalia bipunctata* (Mulsant). *Proc. Zool. Soc. London* 1920*: 475-490. 1920.

7433. HAWKINS, CHAUNCEY J. Sexual selection and bird song. *The Auk* 39: 49-57. 1922.

7434. HAYES, DORIS W. Some studies of apogamy in *pallaea atropurpurea*. *Trans. Amer. Microsc. Soc.* 43: 119-131. 1924.—A report is made of studies upon the influence of various culture conditions on the production of sex organs; the nuclear phenomena accompanying apogamy, and the chromosome count in both gametophyte and sporophyte.—*J. H. B. (Contrib. by Absts. Bact.)*.

7435. HAYES, H. K. Production of high-protein maize by Mendelian methods. *Genetics* 7: 237-257. 5 fig. 1922.

7436. HECTOR, G. P. Correlation of colour characters in rice. *Mem. Dept. Agric. India Bot. Ser.* 11: 153-183. 1922.

7437. HEDFELD, ALBERT. Zwei Falle von hochgradiger congenitaler Wirbelsäulenverkrümmung im Verbindungen mit anderen Missbildungen. [Two cases of high-grade congenital curvature of the spine associated with other malformations.] 31 p. (Dissertation.) Marburg, 1921.

7438. HEGNER, R. W. Measurements of *Trypanosoma Diemyctyli* from different hosts and their relation to specific identification, heredity and environment. *Jour. Parasitol.* 7: 105-113. 2 fig. 1921.

7439. HENDERSON, L. J. Orthogenesis from the standpoint of the biochemist. *Amer. Nat.* 56: 97-104. 1922.

7440. HENNEGUY, F. Chromatine et chromosomes au point de vue de la transmission des caractères héréditaires. [Chromatin and chromosomes from the point of view of the transmission of hereditary characters.] *Scientia* 38: 79-98. 1925.—Because it is continually undergoing physical and chemical changes it is believed that the chromatin is not sufficiently constant to serve as the carrier of hereditary factors. It is suggested that the factors may reside in invisible particles in the nucleus.—*A. J. Mangelsdorf.*

7441. HERIBERT-NILSSON, N. Metoder och teknik vid förädlingsarbetet, speciellt med hänsyn til korsbefrukterna. [Methods and technic of plant breeding, particularly cross fertilization.] *Nordisk Jordbrugsforskning* 1921: 278-297. 3 fig. 1921.

7442. HERRMANN, F. Über Inzuchterscheinungen bei der Pflanzenzüchtung. [Phenomena of inbreeding in plant breeding.] *Gartenwelt* 26: 59. 1922.

7443. HERRMANN, F. Züchtung einer gegen die Blattrollkrankheit widerstandsfähigen

Tomatensorte durch Auslese. [Selection of a variety of tomato resistant to leaf-curl.] Ber. Höheren Staatl. Lehranst. Obst. u. Gartenbau Proskau. 1918-1919: 111. 1921.

7444. HERTWIG, G. Die Entfaltung der Erbanlagen. [The development of hereditary factors.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 257-258. 1922.

7445. HERTWIG, P. Bastardierung und Entwicklung von Amphibieneiern ohne mütterliches Kernmaterial. [Hybridization and development of Amphibian eggs without maternal chromatin.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 255-257. 1922. (See also Bot. Absts. 13, Entry 5841.)

7446. HERZBERG, FRANKEL OTTO. Sammelreferat. Faktorenkoppelung bei Pflanzen. [General summary. Linkage in plants.] Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 324-348. 1925.

7447. HILL, J. A. Studies in the variation and correlation of fleeces from range sheep. Wyoming Agric. Exp. Sta. Bull. 127. 37-53. 1 fig. 1921.

7443. HILL, J. BEN. Cotyledon form and size in reciprocal hybrids between species of *Digitalis*. Bot. Gaz. 80: 84-92. 4 fig. 1925.

7449. HIRSCHLER, JAN. Sur la descendance de *Triton cristatus* provenant du croisement de femelles normales avec des males melaniques par suite de l'extirpation oculaire. [Descendants of *T. cristatus* resulting from crosses of normal females with males rendered melanistic as a result of extirpation of the eyes.] Compt. Rend. Soc. Biol. 85: 978-980. 1921.

7450. HOE, KWEN S. A new variety of barley with striking characteristics. Science 55: 378. 1922.

7451. HOFF, AUGUST. Zur Variabilität von *Arianta* (*Helix*) *arbustorum* Leach. [Variability of *A. arbustorum*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 30: 99-129. 21 fig. 1922.—Various gross and microscopic characters of numerous individuals of this highly variable species, gathered from 21 different localities, were measured and their coefficients of variation determined. Both local and individual differences were marked, especially in body and shell weight, upper jaw size and shape, and number of nerve cells in ganglia. Radula and penis size and formation varied less and a given increment of body weight did not tend to carry with it as great a proportionate change in these characters; the latter relation also held for upper jaw size. There was some tendency for larger animals to have larger cells and nuclei (measured in giant nerve cells and odontoblasts). Snails from localities rich in calcium had larger shell weights, relative to their body weights.—*H. J. Muller*.

7452. HOFFMANN, HERMANN. Inzuchtergebnisse in der Naturwissenschaft und ihre Anwendung auf das manisch-depressive Irresein. [Results of inbreeding in biological science and their application to manic depressive insanity.] Zeitschr. Ges. Neurol. u. Psychiatr. Orig. 57: 92-110. 1920.

7453. HOVASSE, R. La régulation de nombre des chromosomes chez les embryons parthénogénétiques de grenouille rousse. Son mécanisme. [Regulation of the number of chromosomes in parthenogenetic embryos of the red frog. Its mechanism.] Compt. Rend. Acad. Sci. [Paris] 74: 72-74. 1922.

7454. HUNT, HARRISON R. A suggestion concerning the mode of inheritance of mental ability. Eugenical News 10: 105-106. 1925.—Any theory concerning the mode of the inheritance of intelligence must explain: (1) Its fluctuating character; (2) why the feeble-minded breed feeble-minded; (3) the occasional normal progeny of feeble-minded parents; (4) the feeble-minded offspring of feeble-minded \times normal; (5) why mediocrity as a rule breeds mediocrity, though occasionally ability of a high order, and (6) the frequency with which certain strains produce persons of eminence and genius. On the assumption of multiple factors, assigning no factors to idiocy and 10 factors to genius, the author's analysis gives the average yield of each type expected on this hypothesis, and shows the relationship between the expected ratios and facts found in the population at large.—*Orland E. White*.

7455. HUTCHISON, C. B. Plant breeding as a method of increasing crop yields. Missouri State Bd. Agric. Mo. Bull. 18: (1-19). 5 fig. 1920.

7456. HUTCHISON, CLAUDE BURTON. The elementary course in genetics. Science 55: 416-421. 1922.

7457. HUXLEY, J. S. Linkage in *Gammarus chevreuxi*. Jour. Genetics 11: 229-233. 1921.

7458. HUXLEY, J. S., AND E. B. FORD. Mendelian genes and rates of development. *Nature* 116: 861-863. 1 fig. 1925.

7459. IKENO, SEIITIRO. Ein Vererbungsversuch über die Grannen bei Gerste. [Genetic investigation of smut in barley.] *Japanese Jour. Bot.* 2: 189-207. 1924.

7460. IKENO, S. On hybridization of some species of *Salix*. II. *Ann. Bot.* 36: 175-191. 1922.

7461. IMAI, YOSHITAKA. Two cases of close linkage in the Japanese morning glory. *Genetics* 10: 456-469. 1925.

7462. IMAI, YOSHITAKA. Genetic behavior of the willow leaf in the Japanese morning glory. *Jour. Genetics* 16: 77-99. 2 pl., 2 fig. 1925.

7463. IMAI, YOSHITAKI. Genetic studies in morning glories. XI. On the variegated and the heart leaf linkage groups in *Pharbitis Nil*. (Japanese.) *Bot. Mag. Tokyo* 38: 103-119. 1924.

7464. IMAI, YOSHITAKI. Inheritance of deformed leaves in *Pharbitis Nil*. *Bot. Gaz.* 80: 276-287. 1 fig. 1925.

7465. IONESCU-ȘIȘEȘTI, G. Forme noi de grâu, create prin încrucișarea grâului românesc cu grâu Square head. [New forms of wheat, created through the crossing of the Rumanian wheat with the Square head.] *Viața Agricolă* 15: 449-472. 1924.—The author follows 8 consecutive generations of forms obtained by him through hybridization of the Rumanian wheat (*Triticum vulgare erythrospermum*) with the "Square head" (*T. vulgare lutescens*) the presence of awns (?), precocity, and white color of the ear are recessive. The hypothesis of Baur is confirmed, namely, that in the 1st generation the heterozygote plants do not take the dominant character, but an intermediate form. There are correlations between the presence of awns (?) and the precocity, also between vigor and tardiness. Some new forms of practical value were also obtained.—*Emil Pop.*

7466. IPPOLITO, G. Sulle cause probabili che producono la sterilità nelle spighe di frumento. [Probable causes of sterility in wheat.] *Staz. Sper. Agrarie. Italiane* 54: 458-465. 1921.

7467. IRWIN, J. O. On a criterion for the rejection of outlying observations. *Biometrika* 17: 238-250. 1925.—Development from Galton's difference problem and tables for its application. The criterion is compared with Peirce's and Chauvenet's criteria.—*J. R. Miner.*

7468. [ISAEV, V.] Исаев, В. Химеры. [Chimeras.] *Труды Прикл. Бот. и Селекции.* [Bull. Appl. Bot. & Plantbreed.] 13⁴: 47-63. 1922-1923 [1924].—This is a review of literature on chimeras.—*M. Demerec.*

7469. IVES, J. D. Cross-over values in the fruit-fly, *Drosophila ampelophila*, when the linked factors enter in different ways. *Amer. Nat.* 55: 571-573. 1921.

7470. JEHAN, J. B. Experiments with tobacco hybrids in the Departments of Lot and Isère, France. *Mém. Manfr. État, Tabac—Allumettes* 5: 125-160. 1923.—Crosses of the varieties Paraguay × Vuelta Abajo, Dragon Vert × Sumatra and Paraguay × Sumatra have been carried through the 3rd generation and selected for increased yield and other desirable qualities. A cross of Kentucky × Nijkerk is being selected for high nicotine production.—*D. F. Jones.*

7471. JENNINGS, H. S. *Prometheus or biology and the advancement of man.* 94 p. Kegan Paul, Trench, Trubner & Co.: London; E. P. Dutton & Co.: New York, 1925.—An exposition of the interrelations of heredity and environment. "All characteristics then are hereditary in that they depend upon the germinal material and change as that material is altered. All characteristics are likewise environmental, in that they depend upon the conditions under which development occurs, and change as these conditions are altered." A final section gives the author's view of the bearings of this on the "eugenic program."—*Author.*

7472. JENNINGS, H. S. Variation in uniparental reproduction. *Amer. Nat.* 56: 5-15. 1922.

7473. JENSEN, P. BOYSEN. Studien über den genetischen Zusammenhang zwischen der normalen und intramolekularen Atmung der Pflanzen. [Studies on the genetic relation between normal and intramolecular respiration in plants.] *Biol. Meddel. K. Dansk. Videnskab. Selskab.* 4¹: 1-34. 1923.

7474. JEWELL, F. M. Sex ratios in foetal cattle. *Biol. Bull.* [Marine Biol. Lab., Woods Hole] 41: 259-271. 1 fig. 1921.

7475. JONES, D. C. A first course in statistics. ix + 286 p. G. Bell & Sons: London, 1921.

7476. JONES, D. F. Indirect evidence from duplex hybrids bearing upon the number and distribution of growth factors in the chromosomes. *Amer. Nat.* 56: 166-173. 1922.

7477. JONES, D. F. Selective fertilization as an indicator of germinal differences. *Science* 55: 348-349. 1922.

7478. JONES, D. F. The indeterminate growth factor in tobacco and its effect upon development. *Genetics* 6: 433-444. 5 fig. 1921.

7479. JORDAN, H. J. Instinct en "Fremddienliche Zweckmässigkeit." [Instinct and purposefulness in service to other species.] *Genetica* 3: 50-62. 1921.

7480. JUST, GÜNTHER. Der Nachweis von Mendel. Zahlen bei Formen mit niedriger Nachkommenzahl. [The proof of Mendel's results with forms of low progeny counts.] *Arch. Mikroskop. Anat.* 97: 397-418. 1923.

7481. JUST, GÜNTHER. Ein Wort zu Weils Diabetes insipidus-Stammbaum. [A note on the Diabetes insipidus family of Weil.] *Arch. Rass.- u. Ges. Biol.* 16: 312-313. 1925.—Adolph Weil and his son Alfred worked out the well known pedigree of a family in which polyuria occurs in representatives of 6 successive generations. This pedigree had been considered an excellent example of the behavior of a simple mendelian trait in man until some confusion was introduced by Pick who, in reexamining the data, counted as normal all individuals who could not be reached or who died too young for diagnosis. The author finds on correcting for this error that the real ratio of affected to normal offspring is 33:30, which is approximately 1:1. The condition may consequently be regarded as due to a single dominant mendelian factor.—*C. H. Danforth.*

7482. JUST, GÜNTHER. Praktischer Übungen zur Vererbungslehre für Studierende, Ärzte und Lehrer. [Practical handbook of genetics for students, physicians and teachers.] Biologische Studienbücher. Bd. 1. 88. p. Theodor Fischer: Freiburg in Breisgau, 1923.

7483. JUST, GÜNTHER. Untersuchungen über Faktorenaustausch. I. [Linkage investigations.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 36: 95-159. 17 fig. 1924.

7484. KAHN, EUGEN. Erbbiologisch-klinische Betrachtungen und Versuche. [Genetic biological clinical considerations and investigations.] *Zeitschr. Ges. Neurol. Psychiatr.* 61: 264-303. 1920.

7485. KAHN, EUGEN. Über die Bedeutung der Erbkonstitution für die Entstehung, den Aufbau und die Systematik der Erscheinungsformen des Irreseins. [Significance of the hereditary constitution in the origin, growth and classification of the symptomatic forms of insanity.] *Zeitschr. Ges. Neurol. Psychiatrie* 74: 69-102. 1922; *Zeitschr. Indukt. Abstamm.- u. Vererb.* 29: 219-220. 1922.

7486. KAKIZAKI, YÔICHI. Linked inheritance of certain characters in the adzuki bean. *Genetics* 8: 163-177. 1923.—Two varieties of adzuki bean were crossed (Miyako \times Donsu). They differ in several characters, the ones studied being reddish purple (P) vs. (versus) green stems (p), blackish-brown (B) vs. brown (b) pods, and black spotted (S) vs. plain red seed coats (s). The F_1 had deeper reddish purple stems and less intensely spotted seed coats than the σ parent, and blackish brown pods. In the F_2 , reddish-purple stem is always associated with spotted seed coats, green stem with unspotted, while the dark purple stem characteristic of the F_1 assumed to be due to an intensifying factor (I) is always associated with brown seed pod, and vice versa. Thus, Miyako is assumed to be of the constitution *ps ps Ib Ib* while Donsu is *PS PS iB iB*, each containing 2 independent linkage groups. When the characters are considered separately, stem color gives approximately a 9:3:4 ratio; black spotting, a 1:2:1 ratio; and seed pod color, a 3:1 ratio. The author considers linkage the more probable explanation of the observed association between the characters but suggests the possibility that 1 of the 2 factors for stem color may produce black spotting of the seed coats, also that 1 factor may cause stem color and seed pod color.—*Margaret M. Lesley.*

7487. KAPPERT, HANS. Über die Zahl der unabhängigen Merkmalsgruppen bei der Erbse. [Number of independent character groups in peas.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 36: 1-32. 1924.

7488. KEARNEY, THOMAS H. Heritable variations in an apparently uniform variety of cotton. *Jour. Agric. Res.* 21: 227-242. 7 pl., 1 fig. 1921.

7489. KEARNEY, THOMAS H. Pollination of Pima cotton in relation to the yield of seed and fiber. *Jour. Heredity* 12: 99-101. *Frontispiece*. 1921.

7490. KELLY, J. P. The synthesis of full coloration in Phlox. *Science* 55: 245. 1922.

7491. KEMPTON, J. H. Size of cob in maize as affected by the number of fertilized ovules. *Amer. Nat.* 59: 566-570. 1925.—The length of the cob in maize is not influenced by the number of seed on the ear.—J. H. Kempton.

7492. KEUSSLER, H. VON. Über einige Fälle von Hermaphroditismus mit besonderer Berücksichtigung der Zwischenzellen. [Some cases of hermaphroditism with special reference to the interstitial cells.] *Beitr. Path. Anat. u. Allg. Path.* 67: 416-436. 1920.

7493. KHRENNIKOV, E. V.] Хренников, Е. В. Техника селекции злаков. [Technique of cereal breeding.] Sugar trust edition. 265 p., 5 fig. Kiev, 1922.—This book is based on Kiesslings "Technik der Getriedezüchtung." The material is divided into 9 chapters which treat of the following problems: Principles of selection, garden, harvest, method of selection, isolation of new varieties by selection, propagation of selected types, and notebooks.—M. Demerec.

7494. KIESSLING, L. Zur Problemstellung, Begriffsbestimmung und Methodik der Pflanzenzüchtung. [Problems, definitions and methods in plant breeding.] *Beitr. Pflanzenzücht.* 7: 11-21. 1924.—Increase of technical knowledge in genetics has not been followed by a corresponding plant improvement. In crops strictly delimited in character by technical demands the breeder must confine his efforts within certain limits, which often facilitates results. Also, standards remain fixed. In breeding vegetables and flowers, novelty is an important object to be attained and this is often helpful. With certain crops, such as oats, there is no type toward which plant breeders agree in working and consequently much of the work seems to be aimless in character. Wheat breeding is more complicated than rye breeding, and further complications ensue if the quality of wheat must be considered. Potato breeding is in difficulties, particularly because of the immense number of varieties in existence, many of which are of no particular merit. Improvement in legumes and grasses is discussed and emphasis is placed upon the future possibilities. Suggestions are made in regard to improvement of the German terminology relative to improved seed and to crops of different status. Much is due to modern men who have cleared the air with respect to the older Darwinian and Lamarckian conceptions. In spite of all modern technical and scientific aids, the breeder's personality is still the dominating feature in any successful work.—L. R. Waldron.

7495. KIHARA, HITOSHI, AND TOMOWO ONO. The sex-chromosomes of *Rumex Acetosa*. *Zeitschr. Indukt. Abstamm.- u. Vererb.* 39: 1-7. 1 pl., 17 fig. 1925.—The somatic cells of ♂ plants of *Rumex acetosa* have 15 chromosomes, 12 similar in appearance and 3 larger ones which are designated by the letters M, m_1 and m_2 . The ♀ plant has 14 somatic chromosomes, 12 similar in appearance and 2 large M chromosomes. The M chromosome represents the X chromosome, the m_1 and m_2 combined represent the Y chromosome. Two types of pollen are produced—that with $7(6 + M)$ chromosomes and that with $8(6 + m_1 + m_2)$ chromosomes. All megaspores have $7(6 + M)$ chromosomes.—A. E. Longley.

7496. KING, S. D. Spermatogenesis in a spider (*Amaurobius* sp.). *Nature* 116: 574-575. 1 fig. 1925.—In an attempt to check the work of Ernest Warren (*Nature* 116: 396.) the author observes that spermatogenesis takes place by means of normal mitoses. An X chromosome is distinguishable throughout. Two kinds of spermatids are observed. No evidence of amitosis was found in any divisions.—Anna R. Whiting.

7497. KIRCHNER, O. Über die Bekämpfung von Pflanzenkrankheiten, im besonderen von Getreiderost und Getreidebrand, durch züchterische Massnahmen. [Control of plant diseases, especially rust and smut of cereals, by means of breeding.] *Nachrichtenbl. Deutsch. Pflanzenschutzdienst* 16: 55. 1921.

7498. KIRK, LAWRENCE E. Artificial self-pollination of red clover. *Sci. Agric.* 5: 179-189. 1925.—The object of this pollination experiment on the variety Altaswede was to study the possibilities for improving red clover by inbreeding. The factor or factors which determine self-fertility show marked segregation. Results are similar to those in maize and indicate

great possibilities for crop improvement with respect to seed production, hardiness, disease resistance, and many morphological characters of commercial importance.—*T. G. Major*.

7499. KLEBAHN, H. Weitere Beobachtungen über *Oenotheras* aus Nordwestdeutschland. [Further observations on *Oenotheras* in northwestern Germany.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 39: 8-30. 2 pl. 1925.

7500. KLEINE, HEINRICH VIKTOR. Hypothese zur Entstehung und Vererbung der Homosexualität. [Hypothesis of the origin and heredity of homosexuality.] *Zeitschr. Gesam. Neurol. u. Psychiatrie* 83: 497-508. 1923.—Since homosexuality shows a high incidence in certain families, it presumably has a hereditary background. This may be dependent on a merely qualitative difference in the endocrine output, which in turn may vary at different periods of life.—*C. H. Danforth*.

7501. KOLMER, WALTER, UND FERD, SCHEMINZKY. Zwei Fälle von Hermaphroditismus verus. [Two cases of hermaphroditus verus.] *Pflüger's Arch. Physiolog.* 194: 362-364. 2 fig. 1922.

7502. KOOIMAN, HAVIK NICOLAAS. Over de erfelijkheid van de kleur der zaadhuid van *Phaseolus vulgaris*. [The inheritance of seedcoat color in *Phaseolus vulgaris*.] *Diss. Utrecht.* 97 p. 1 pl. C. A. I. van Dishoeck: Bussum, 1920.

7503. KOOIMAN, H. N., AND R. E. CLELAND: Chromosome arrangements during meiosis in certain *Oenotheras*. *Genetica* 5: 283-284. 1924.

7504. KOSTITSH, ALEXANDER. Sur l'involution du processus spermatogénétique provoquée par l'alcoolisme expérimental. [The involution of the spermatogenic processes provoked by experimental alcoholism.] *Compt. Rend. Soc. Biol.* 84: 674. 1921.

7505. KOTOWSKI, FELIKS. Wpływ izolacji na kapuste (*Brassica oleracea capitata*). [The effect of self-fertilization on cabbage.] (English Summary.) *Mem. Inst. Polonais Econ. Rur. Putawy.* 1A¹: 9-23. 1920.

7506. KRAUS, ANTON W. Zur Entstehung der Geschlechtsdifferenzierung. [Origin of sex differentiation.] *Naturwissenschaften* 10: 67-68. 1921.

7507. KREDIET, G. Ovariotestes bei der Ziege. [Ovariotestes in the goat.] *Biol. Zentral.* 41: 447-455. 1921.

7508. KRIEG. Untersuchungen über das Zustandekommen der Fellzeichnung, bei den Säugetieren, insbesondere der Streifung. [Studies on the formation of coat patterns in mammals, especially striping.] *Anat. Anzeiger* 54: 104-106. 1921.

7509. KRISTOFFERSON, KARL B. Spontaneous crossing in the garden bean, *Phaseolus vulgaris*. *Hereditas* 2: 295-400. 1921.

7510. KŘÍŽENEČKÝ, J. K analýze podstaty pohlavního rozlišení. [Analysis of sex-distinction bases.] *Biol. Listy.* 7: 95-107. 1919.

7511. KŘÍŽENEČKÝ, J. Ueber die Inzucht in Populationen und über eine Methode zur Bestimmung ihres Grades. [Inbreeding of populations and a method for determining its degree.] *Studia Mendeliana.* P. 112-148. Typos: Brünn, Czechoslovakia, 1923.—The author believes that while Mendel's law has thrown light on the segregation of deleterious recessive factors following inbreeding, it cannot explain certain consequences of inbreeding noted among all organisms, such as loss of size and reduction of fertility, increased susceptibility and a certain apathy indicative of general constitutional weakening. He suggests a modification of Pearl's coefficient for measuring inbreeding, namely, $Z_n = \frac{100(P_n - Q_n)}{P_n}$ where P_n is the possible number of ancestors back to the n th generation and Q_n is the actual number.—*Sewall Wright*.

7512. KROON, H. M. Die Erbllichkeit der Trunksucht in der Familie X. [Inheritance of drunkenness in the family X.] *Genetica* 6: 391-400. 1924.—The author has studied the occurrence of habitual drunkenness in a pedigree comprising 139 individuals in 5 generations. The tendency toward drunkenness appeared to be determined by inherent rather than by environmental factors. It appeared only in ♂ descendants, although some of the normal females were able to transmit the tendency to their ♂ descendants. Males exhibiting the character, when mated to normal females, transmitted it to about $\frac{1}{2}$ of their sons. Results are explained by assuming that the tendency to drunkenness is determined by a single Mendelian factor, dominant in males, recessive in females.—*L. C. Dunn*.

7513. KUSCHAKEWITSCH, S. Studien über den Dimorphismus der männlichen Geschlechtselemente den Prosobranchia. II. Die Spermatogenese von *Cerithium vulgatum* L. [Studies on the dimorphism of the male sex elements in the Prosobranchia. II. Spermatogenesis of *C. vulgatum*.] Arch. Zellforsch. 15: 313-369. 4 pl., 7 fig. 1921.

7514. KÜSTER, ERNST. Beiträge zur Kenntnis der panachierten Gehölze. [Variegated woody plants.] Mitteil. Deutsch. Dendrol. Ges. 35: 146-155. 5 fig. 1925.—On the leaves of *Aucuba japonica* the boundaries between light and normal green are often marked by a yellow transition zone as in *A. japonica aurei maculata*. In other forms there are no transition zones. In some *Aucubas* there is a difference between the upper and lower leaf surface spots. In many cases the light color is in the 3 upper mesophyll layers and is not visible in the lower part as in *A. japonica crassifolia aurea maculata*. A description is given of variegation due to enzymatic actions, especially in *Acer dasycarpum*. The boundaries between the green and the lighter colored parts are very distinct. Types of variegation are described where the mesophyll remains green and the veins are light colored. An instance of progressive variegation is given in *Actinidia kolomicta* and another of sectorial variegation in *Picea excelsa*.—*J. C. Th. Uphof*.

7515. KUZNETSOVA, E. S. O Geneticheskoi Prirode Ozimyk i larovykh Rastenii. [Genetic nature of winter and spring varieties of plants. Izo. Agron. Fakult. Saratovsk Univ. 1921: 1-25. 1 pl., 2 fig. 1921.

7516. LABBÉ, A. L'allélogénese et l'hérédité. [Allelogenesis and heredity.] Scientia 37: 219-328. 1925.

7517. LABBÉ, ALPHONSE. Sur des fécondations hétérogènes. [Heterogeneric fertilizations.] Compt. Rend. Acad. Sci. [Paris] 173: 942-945. 1921.

7518. LAFORA, GONZALO R. Angeborener Nystagmus und hereditärer Kopftremor. [Congenital nystagmus and hereditary familial ataxy.] Arch. Neurobiol. 2: 181-188. 1921.

7519. LAIBACH, F. Über Heterostylie bei Linum. [Hererostyly in Linum.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 245-247. 1922.

7520. LANE, H. H. The intrinsic-extrinsic mechanism of heredity and variation. Occasional Papers Biol. Dept. Phillips Univ. 1. 1-12. 1921.

7521. LANZA, D. Osservazioni di genetica in coltivazioni di *Vicia Faba* L. [Observations on the genetics and cultivation of *Vicia Faba* L.] Boll. R. Orto Bot. Palermo 2: 133-148. 1 pl. 1921.

7522. LARUE, CARL DOWNEY. The results of selection within pure lines of *Pestalozzia Guepini* Desm. Genetics 7: 142-201. 10 fig. 1922.

7523. LEHMANN, ERNST. Bemerkungen zu einem Referat Renners über meine Arbeit: Zur Terminologie und Begriffsbildung in der Vererbungslehre. [Remarks on a review by Renner of my work "Terminology and formation of concepts in genetics."] Zeitschr. Bot. 14: 173-179. 1922.

7524. LEHMANN, E. Die Theorien der Oenotheraforschung; Grundlagen zur experimentellen Vererbungs- und Entwicklungslehre. [The theories arising from Oenothera studies; genetical and evolutionary principles.] xviii + 526 p. Illus. Gustav Fischer: Jena, 1922.—After an introductory chapter, the history and systematics of the various species of *Oenothera* are treated in detail, special consideration being given to *O. lamarckiana*. This is followed by a chapter in which are discussed deVries' theory of pangenesis, and in a general way, the various kinds of crosses that have been recognized in Oenothera studies. The 4th chapter details the morphology and cytology of the Oenotheras and their genetical nature. All of the known species, hybrids and mutants are discussed in detail and treated individually in relation to their genetical constitution. A general discussion of the problem of mutation is followed by a final chapter on the relation of the Oenotheras to the problems of heredity.—*Ralph E. Cleland*.

7525. LEHMANN, E. Experimentelle Abstammungs- und Vererbungslehre. [Experimental evolution and heredity.] 2nd ed. Natur. u. Geisteswelt. 124 p. B. G. Teubner: Leipzig und Berlin, 1921.

7526. LEHMANN, ERNST. Neuere Oenotherenarbeiten. Sammelreferat III. Die Oenotherenmutanten und die chromosomalen Grundlagen ihrer Entstehung. [Newer Oenothera studies. General review III. The Oenothera mutants and the chromosome basis of their origin.] Zeitschr. Bot. 13: 231-249. 19 fig. 1921.

7527. LEHMANN, E. Neuere Vererbungssuche mit Epilobien und ihr Verhältnis zu den Oenotheraproblemen. [Recent genetic investigations on *Epilobium* in relation to *Oenothera* problems.] Zeitsch. Indukt. Abstamm.- u. Vererb. 33: 263-265. 1924.—The author succeeded in obtaining in the progeny of the cross, *E. montanum* × *E. parviflorum*, both of which have wholly good pollen and fertile seed, strains which presented many of the peculiarities of the mutating *Oenotheras*, especially significant being the appearance of a *gigas* mutant in F_3 , with the important distinguishing characters of the *gigas* derived from *O. lamarckiana*.—*Ralph E. Cleland*.

7528. LEHMANN, ERNST. *Oenothera fallax* Renner und die Nomenklatur der Oenotherenbastardierungen. [*Oenothera fallax* and the nomenclature of *Oenothera* hybridization.] Ber. Deutsch. Bot. Ges. 38: 166-175. 1920.

7529. LEHMANN, ERNST. Über die Selbststerilität von *Veronica syriaca*. II. [Self-sterility in *Veronica*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 161-177. 1922.

7530. LEHMANN, E. Über Epilobienbastarde. [*Epilobium* hybrids.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 237-238. 1922.

7531. LENZ, F. Bemerkungen zur Variationsstatistik und ein neuer Vorschlag. [Remarks upon variation statistics and a new method.] Zeitschr. Indukt. Abstamm.- u. Vererb. 33: 311-313. 1924.—The author holds that the use of the standard deviation as a measure of dispersal in association with the arithmetic mean as the average is illogical in that deviations are weighed by their square in the former but only by their own value in the latter. He thus prefers the average deviation as the measure of dispersal. He holds that the product moment coefficient of correlation similarly gives undue weight to large joint deviations and suggests as a measure of correlation what he calls the correlation index. $K = \frac{1}{2} \left(\frac{[S_{x1} + S_{x4} - S_{x2} - S_{x3}]}{S_x} + \frac{[S_{y1} + S_{y4} - S_{y2} - S_{y3}]}{S_y} \right)$. He divides the correlation table into 4 quadrants by means of the

2 means. S_{x1} , S_{x2} , S_{x3} and S_{x4} are the sums of x-deviations in the upper left, upper right, lower left, and lower right, respectively. S_{y1} , S_{y2} , S_{y3} , and S_{y4} are obtained similarly for the y-deviations while S_x and S_y are the total sums.—*Sewall Wright*.

7532. LENZ, FRITZ. Koppelung mit dem Geschlecht oder Lokalisation im Geschlechtschromosome [Coupling with sex or localization in the x-chromosome.] Zeitschr. Indukt. Abstamm.- u. Vererb. 28: 243-244. 1922.

7533. LENZ, FRITZ. Menschliche Auslese und Rassenhygiene. II. [Human selection and eugenics.] vi + 251 p. J. F. Lehmanns: München, 1921.

7534. LENZ, F. Über Asymmetrie von Variabilitätskurven, ihre Ursachen und ihre Messung. [Asymmetry of the curves of variability, their origin and their measurement.] Arch. Rass.- u. Ges. Biol. 16: 420-428. 1925.

7535. LENZ, FRITZ. Über den Nachweis Selektiver Befruchtung beim Menschen. [Selective fertilization in man.] Arch. Rass.- u. Ges. Biol. 16: 435-439. 1925.

7536. LENZ, F. Über Erblichkeit menschlicher Anlagen. [Heredity of human Anlagen.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 264-265. 1922.

7537. LENZ, F. Über spontane Fremdbefruchtung bei Bohnen. [Spontaneous cross fertilization in beans.] Zeitschr. Indukt. Abstamm.- u. Vererb. 25: 222-231. 1921.

7538. LENZ, F. Zum Thema Speziesbastarde. [Species hybrids.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 238-239. 1922.

7539. LENZ, F. Zur weiteren Fragestellung über die Befruchtungsart der Bohnen. [Further statement of the problem as to the method of fertilization in beans.] Zeitschr. Indukt. Abstamm.- u. Vererb. 25: 251-253. 1921.

7540. LESAGE, PIERRE. Remarques sur l'interprétation des phénomènes d'hérédité chez les phanérogames. [Remarks on the interpretation of hereditary phenomena in the phanero-gams.] Compt. Rend. Acad. Agric. France. 1924: 2-4. 1924.—The author defines an acquired characteristic and points out the difficulty of proving in 1 generation the inheritance of such a characteristic in phanerogamic plants. He stresses the fact that the seed may be affected in the same manner as the parent plant which acquires a new characteristic in a changed environment.—*Mary Ellen Peck*.

7541. LESLEY, MARGARET MANN. Chromosomal chimeras in the tomato. *Amer. Nat.* 59: 570-574. 5 fig. 1925.—Tetraploid areas have been found to occur not infrequently in tomato roots, both in plants from cuttings and from seed. Whole roots, sectors of roots or only a few cells may be tetraploid. Since none of the plants under test had received especial treatment it is emphasized that before an attempt is made to induce such a condition the frequency of "spontaneous" tetraploidy must be ascertained. No tetraploid branches were found, but it is thought possible that small tetraploid areas may occur in the shoot and that these may give rise to the tetraploid germ cells which must be postulated to account for the rather frequent occurrence of triploid tomatoes.—*Author*.

7542. LEVEN. Zur Vererbung von *Lingua plicata* und *Ichthyosis vulgaris*. [Genetics of *L. plicata* and *I. vulgaris*.] *Arch. Rass.- u. Ges. Biol.* 16: 309. 1925.

7543. [LEVITSKIĬ, G. A.] Левитский, Г. А. Элементы биометрики. Часть I. Статистический анализ явлений изменчивости. [Elements of Biometrics. Part I. Statistical analysis of phenomena of variability.] 118 p. Sugar Trust edition, Kiev, 1922.—Five chapters of the book deal with the following subjects: Mathematics of variability, empirical variability and its quantitative analysis, determination of probable error, correlations, deviation from normal type of distribution. Whenever possible, problems from practical breeding are used to facilitate the understanding of the subjects.—*M. Demerec*.

7544. LEVY, JACOB. Der Knabenüberschuss bei den Juden. Beitrag zur Frage der Geschlechtsbestimmung. [The excess of males among the Jews. A contribution to the problem of sex determination.] *Zeitschr. Sexualwiss.* 7: 345-353. 1921.

7545. LIENHART, R. Remarques à propos de sexe des oeufs de poule. [Remarks on the sex of eggs in fowls.] *Compt. Rend. Soc. Biol.* 85: 1086-1089. 1921.

7546. LILIENFELD, F. A. Vererbungsstudien an *Dianthus barbatus* L. [Genetic studies on *D. barbatus* L.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 28: 207-237. 1922.

7547. LILLIE, FRANK R. Studies of fertilization. VIII. On the measure of specificity in fertilization between two associated species of the sea-urchin genus *Strongylocentrotus*. *Biol. Bull. [Marine Biol. Lab., Woods Hole]* 40: 1-22. 1921.

7548. LILLIE, FRANK R. Studies of fertilization. X. The effects of copper salts on the fertilization reaction in *Arbacia* and a comparison of mercury effects. *Biol. Bull. [Marine Biol. Lab., Woods Hole]* 41: 125-143. 1921.

7549. LINDHARD, E. Calculation of the probable error and variation statistics with reference to field experiments. *Nord. Jordbrugsforsk.* 1920: 283-291. 1920.

7550. LINDHARD, E. Der Rotklee, *Trifolium pratense* L., bei natürlicher und künstlicher Zuchtwahl. [Red clover, *T. pratense* by natural and artificial selection.] *Zeitschr. Pflanzenzücht.* 8: 95-120. 4 fig. 1921.

7551. LINDSTROM, E. W. Genetic factors for yellow pigment in maize and their linkage relations. *Genetics* 10: 442-455. 1925.—Two factors are now recognized for yellow seedlings in maize. These factors have been designated I_1 and I_2 and differ from each other in their genetic reactions with the factors for white seedlings W_1 , W_2 and W_3 . Where I_1 gives a 12:3:1, F_2 in crosses with W_1w_1 , I_2 gives a 9:3:4 ratio. Both factors for yellow seedlings are located in the chromosome with the aleurone factor R and are separated by about 35 units. The author discusses the possibility that the existence of these 2 genes for yellow seedlings indicates 2 yellow pigments in plant tissue, one unrelated and the other related organically to the green pigment.—*J. H. Kempton*.

7552. LINDSTROM, E. W. Inheritance in tomatoes. *Genetics* 10: 305-317. 1925.—Complete linkage is found between the Dd factors for stature and the Pp factors for pubescence. Both of these factors are independent of Rr flesh color factors and Yy skin color factors which are not linked with each other. Pollen grains carrying the R factor fertilized slightly more ♀ gametes than those carrying the r factor.—*D. F. Jones*.

7553. LINSBAUER, K. Rückdifferenzierung als Voraussetzung ontogenetischer Entwicklung. [Regressive differentiation as a hypothesis of ontogenetic development.] *Flora* 118-119: 346-368. 1925.—The author looks upon mitosis as a stage in which the cell returns in a greater or less degree to the undifferentiated condition, and by this regression it offers new possibilities to its descendants. From the undifferentiated condition to the complete differ-

entiation of "work cells" he distinguishes 5 stages: (1) undifferentiated, which is really attained only in the resting condition; (2) plastic, initiating differentiation which may be progressive or regressive according to conditions; (3) differentiated, but capable of progressive development, for example, cells capable of development and growth when isolated in cultures; (4) differentiated, but incapable of progressive development although capable of regressive divisions, for example, regenerative structures of vascular bundles; (5) differentiated, and incapable of either progressive or regressive development.—*A. G. Stokey.*

7554. LIPMAN, CHAS. B. Orthogenesis in bacteria. *Amer. Nat.* 56: 105-115. 1922.

7555. [LISITSIN, P. I.] Лиситин, П. И. Русский культурный клевер. [Russian cultivated clover.] (English summary.) Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. and Plantbreed.] 15⁴: 2-208. 6 fig. 1925.—The author states that clover was first imported into Russia in 1776. This and the following attempts to establish it in Russia were unsuccessful, mainly because severe winters killed the plants. Small landowners who did not use imported but repeatedly used home grown seed succeeded at the beginning of 19th century in getting a winter-hardy variety, thus making it possible to establish clover in Russia. The author studied different characters of clover to ascertain their usefulness in breeding work. To make the material genetically homogeneous the author propagated the plants asexually from 1 individual obtaining about 50 plants. It was established that clover continues to grow during the whole period of flowering of the terminal head. All the characters that must be taken into consideration are less altered about the stage when $\frac{1}{2}$ of the flowers of the terminal head are in bloom. This stage is regarded as the moment of readiness for analysis. The period of flowering can be accelerated by 2 weeks if fertilizers are applied at the "sensitive period," which embraces the 1st 2-3 weeks after germination. Application of fertilizers throughout the development of the plants produces no influence on the flowering period. The least variable characters were found to be number of internodes, percentage of leaves and length of stem; the most variable, weight of stem and number of branches.—A study of the flowering period of clover from different parts of Russia was made. Russian clover, *Trifolium pratense sativum* var. *foliosum* Brand, is a very late-blooming variety.—The author found that plants of late varieties and lines have a larger number of internodes, more branches, more and longer stems, less ashes, smaller total amount of nitrogen, smaller content of albumen and are heavier than plants of earlier varieties. A study of leaf development was made. No relation was found between winter resistance and depth of roots. Winter resistance was found to be strongly correlated with time of bloom, late varieties being more resistant.—*M. Demerec.*

7556. LITTLE, C. C., AND B. W. JOHNSON. The inheritance of susceptibility to implants of splenic tissue in mice. 1. Japanese waltzing mice, albinos, and their F₁ generation hybrids. *Proc. Soc. Exp. Biol. Med.* 19: 163-167. 1922.

7557. LLOYD, FRANCIS E. Inheritance of teratoid flowers in *Diplacus glutinosus*. Carnegie Inst. [Washington] Yearbook 20: 74-75. 1921.

7558. LOEB, LEO. The inheritance of cancer in mice. 2nd. Internat. Congr. Eugenics Vol. 1. P. 182-185. Williams & Wilkins: Baltimore, 1923.—The cancer rate of each strain or family is a definite characteristic of this strain and is transmitted by heredity to successive generations. The rate may vary between zero and 100%. All intergrades may be found in strains and families. While these differences in rate persisted through successive generations in the majority of the strains, some changes may take place in later generations. These changes consisted in a decrease in the majority of cases. In others there was an increase. These changes were probably due to unfavorable results of inbreeding in some cases, and to processes of selection in mating in others.—If we cross strains with a similar tumor rate, the offspring inherits the tumor rate common to both parents; if parents differ in tumor rate, that of the offspring is on the whole intermediate between those of the parents. The age at which tumors appear is also a characteristic of individual strains and is transmitted. In general, in the strains with the higher tumor rates the tumors appear at an earlier age. In addition there is a peculiar tumor age in certain strains which is independent of the tumor rate.—In general the cancer rate in mice is not sex-linked. The hereditary disposition to cancer is probably due to the coöperation of multiple factors. The hereditary tendency to cancer alone is not sufficient to produce cancer, at least in the majority of cases. There must be added to it

a realizing factor which in the case of the mammary cancer in mice (most common variety in mice) consists in the internal secretion of the ovary. The more intense the action of these realizing factors, the more can the hereditary factor be dispensed with. There is no real causal connection between the factors that determine a certain color, vigor, prolificacy, size and rapidity of growth and tumor rate in mice, although in some strains certain of the latter characteristics are inherited in the same way as the tendency towards cancer. There may possibly be an association between a high cancer rate of a strain and a low resistance to other diseases. In our strains there was inherited essentially not a general tendency to tumor formation, but a specialized tendency to cancer of the breast. This agrees with the fact that in cases of the so-called endemic occurrence of cancer, the same specific kind of cancer is found in each instance. Slye recently showed that in some families of mice a tendency to certain otherwise rare cancers is inherited. The endemic occurrence of cancer in general is due to the hereditary transmission of the disposition to cancer and in certain cases to infection with certain metazoan parasites which act as the necessary external stimulus. The evidence on hand strongly favors the conclusion that the factors found in cancer of mice apply also in human cancer.—*Author*.

7559. LOHR, P. L. Fluctueerende, en correlatieve variabiliteit van eenige macroscopische kenmerken van het riet. [Fluctuating and correlative variability in some macroscopic characters of rice.] *Arch. Suikerind.* 28: 418-438. 1920.

7560. LONGMAN, H. A. Factors in variation. *Proc. Roy. Soc. Queensland* 32: 2-18. 1920.

7561. LOPRIORE, GIUSEPPE. *Genetica sperimentale. Saggio di applicazione al miglioramento della piante agrarie.* [Experimental genetics. Demonstration of the application of plant breeding to the improvement of agriculture.] 200 p., 3 pl. Torino Unione Tipografico Editrice Torinese: Turin, Italy, 1920.

7562. LOPRIORE, G. *Teratologia sperimentale.* [Experimental teratology.] *Riv. biol.* 3: 1-32. 1921.

7563. LORENZ, PAUL. Beitrag zur Theorie des Chromomeren-austausches. [Contribution to the theory of chromomere crossing-over.] *Zeitschr. Indukt. Abstamm- u. Vererb.* 40: 108-114. 1925.

7564. LOTSY, J. P. Charles Darwin over den invloed der Kruising. [Charles Darwin on the influence of crossing.] *Genetica* 3: 513-543. 1921.

7565. LOTSY, J. P. Evolutie-Factoren. [Evolution factors.] *Genetica* 3: 442-480. 1921.

7566. LOTSY, J. P. Hybridity and the evolution of species. *Nature* 108: 274, 400-401. 1921.

7567. LUDFORD, R. J., AND J. BRONTÉ GATENBY. Dictyokinesis in germ-cells. *Proc. Roy. Soc. London* 92: 235-244. 2 pl. 1921.

7568. LUDWIG, EUGEN. Über den Haarstrich eineiiger Zwillinge. [Direction of the hair in identical twins.] *Anat. Anzeiger* 55: 1-11. 1922.

7569. LUNDBORG, H. Kultur- und Rassenprobleme in medizinisch-biologischer Beleuchtung. I. Sozialanthropologische Untersuchungen in Schweden zur Beleuchtung der Volksstruktur und gewisser damit im Zusammenhang stehender sozialer Fragen. [Cultural and racial problems from the medico-biological standpoint. I. Socio-anthropological investigations in Sweden to elucidate the structure of a people and certain social questions correlated with it.] *Svenska Lakaresällskapets Handlingar* 46: 65-72. 1920.

7570. LUNDBORG, H. Rassenmischung—Vermehrte heterozygotie (Genchaos)—Konstitutionsveränderungen—Habitus asthenicus sive Paralyticus (zunahme der Körpercrosses u.s.w.)—Tuberkulose. Eine Ursachenkette. [Race mixture—Multiplied heterozygosis (genetic chaos)—Modification of constitution—Habitus Asthenicus sive Paralyticus (increase of body size, etc.)—Tuberculosis. A causal chain.] *Hereditas* 2: 77-87. 1 fig. 1921.

7571. LYNCH, C. J. Studies on the relation between tumor susceptibility and heredity. I. *Jour. Exp. Med.* 39: 481-495. 3 fig. 1924.—A brief résumé is given of recent work on inheritance of susceptibility to spontaneous tumors, particularly in mice. The author outlines the basic principles of Mendelian inheritance as applied to simple characteristics and indicates the prac-

tical application of these fundamentals to cancer incidence. He points out the value of the backcross generation in testing the validity of Mendelian principles. The paper deals in a preliminary way with the crossing of mice from diverse sources. In every case the females were selected from the so-called high-cancer families, while the ♂ parents were taken from "possible" low-susceptibility stock. The result indicates that if cancer susceptibility is hereditary it is inherited as a dominant, since a high percentage of susceptible individuals were obtained in the F_1 generation (contradictory to Slye's interpretation). Data are submitted as showing that breeding of females does not change the tumor rate of the given stock to which the individuals belong (contradictory to data of L. Loeb). The age range for the cancerous individuals is practically the same as the age range for non-cancerous individuals.—*L. C. Strong.*

7572. MACBRIDE, E. W. Recent German work on heredity and evolution. *Nature* 116: 776-778. 1925.

7573. MACBRIDE, E. W. Some causes of a C_3 population. *Sci. Prog.* 19: 86-101. 1924.—The term C_3 is a designation applied to pathological defectives or morons with a mental age of 8, 9 or 10 years. The work of Goddard in New Jersey is cited to show that the abnormality is due not to syphilis or alcoholism in the parents but to heredity. The author discusses Gustav Tornier's theory of "germ weakness" as the origin of fancy races of goldfish and discusses both his own and Tornier's experimental work on the embryos of frogs and newts, in which abnormalities were produced which are claimed to be heritable, since (1) fancy races of goldfish are producible under very unsanitary and adverse conditions, (2) these races breed true, and (3) many of these abnormalities are producible at will by subjecting the embryo to various types of adverse environment during development. Jansen's "feebleness of growth" theory is also cited to show that many characters tending to be hereditary are caused by bad environment during embryonic development. Alterations in the blood of the mother during intrauterine life are seen to be the causes of human "germ weakness" producing this C_3 population. The author believes that these alterations are produced by too rapidly recurring pregnancies and by too much work during pregnancy and concludes that the C_3 population is due to "reckless reproduction" and an absence of a rigorous natural selection, and that birth control and sterilization of the unfit are the remedies which must be applied.—*M. N. Pope.*

7574. MACBRIDE, E. W. The chromosome theory of inheritance. *Sci. Prog.* 16: 450-456. 1922.

7575. MACBRIDE, E. W. The inheritance of acquired characters. *Sci. Progress* 16: 300-303. 1921.

7576. MACDOWELL, E. CARLETON. Alcohol and white rats: a study of fertility. *Proc. Soc. Exper. Biol. Med.* 19: 69-71. 1921.

7577. MACDOWELL, EDWIN CARLETON, AND ELIZABETH MAY LORD. Data on the primary sex ratio in the mouse. *Anat. Rec.* 31: 143-148. 1925.—By surgical examination of the corpora lutea of pregnancy, 106 litters of mice have been obtained in which all the corpora lutea were represented by mice sexed at birth, hence litters in which the primary sex ratio had not been modified by prenatal mortality. These litters total 416 males and 415 females, indicating a primary ratio of 1:1.—*E. C. MacDowell.*

7578. MACDOWELL, E. C., AND E. M. VICARI. Alcoholism and the behavior of white rats. I. The influence of alcoholic grandparents upon maze-behavior. *Jour. Exp. Zool.* 33: 209-291. 17 fig. 1921.

7579. McFADZEN, J. S. An example of line-breeding. *Jour. Dept. Agric. Victoria* 22: 94-97. 1 fig. 1924.

7580. McINTOSH, T. P. A historical note on some potato varieties and breeders.—*Gard Chron.* [London] III. 78: 374, 393, 413, 414, 1925.—This is a summary of the origin and development of some of the leading varieties of potatoes and includes brief sketches of a number of men who were prominent as potato breeders. Potato breeding in Great Britain was stimulated as a result of the late blight epidemic in 1845. The Rock potato is thought by the author to be the oldest potato in cultivation in Great Britain. Special attention is given to the Fluke and Garnet Chili on account of the fact that they represent the parent forms from which a

great number of varieties have been developed. The derivatives of both of these parental forms are discussed in connection with the breeders concerned. An account of the work of Wm. Paterson; J. Clarke; Robert Fenn; Archibald Findlay; Nicol; Wm. Sim; W. Kerr; J. Brown; J. H. Wilson; D. McKelvie; Messrs. Farish and Messrs. Dobbie & Co. is presented. The article is concluded with a brief sketch of 2 continental introductions: Pres. Kruger and Juli.—*W. Stuart.*

7581. MACOUN, W. T. Results in fruit breeding at the Experimental Farm, Ottawa. *Proc. Amer. Soc. Hort. Sci.* 1921: 37-40. 1921.

7582. McROSTIE, G. P. Inheritance of disease resistance in the common bean. *Phytopathology* 10: 175-177. 1920.

7583. MALINOWSKI, EDMOND. Sur les phénomènes de "linkage" d'ordre supérieur. [The phenomena of linkage of a high order.] *Compt. Rend. Soc. Biol.* 93: 1395-1396. 1925.—The article concerns linkage in *Triticum* crosses.—*Oran Raber.*

7584. [MAL'TSEV, A. I.] Мальцев, А. И. Состояние и деятельность Степной Опытной Станции Отдела Прикладной Ботаники и Селекции за период 1911-1921 г. [Activity of the Steppes Agricultural Experiment Station of the Department for Applied Botany and Plant-breeding for the period from 1911 to 1921.] *Труды Прикл. Бот. Селекции.* [Bull. Appl. Bot. and Plantbreed.] 13³: 73-84. 2 fig. 1922-1923. [1923].—From 1911 to 1916 the principal work at the station was breeding of small grains; at the end of that period a study of wild plants grown in the steppes was undertaken. In the period, 1917-1921, the station suffered greatly from the war. During this period, scientific work was limited to the study of wild plants, especially those important in the production of honey, medical plants, weeds, cereals and vegetables.—*M. Demerec.*

7585. MASSART, JEAN. Stages in conjugation. *Bull. Cl. Sci. Acad. Roy. Belgique* 7: 38-53. 1921.

7586. MATHEWS, J. S. Variations. *Jour. Bot. Soc. South Africa* 6: 4-5. 1920.

7587. MATSUYAMA, ROKURO. Experimentelle Untersuchungen mit Rattenparabiosen. 3. Die Veränderungen der Geschlechtsdrüsen und der Organe, die damit in inniger Beziehung stehen. [Experimental studies on parabiosis in rats. 3. Modification of the sex glands and the organs which stand in intimate relation to them.] *Zeitschr. Path.* 25: 436-485. 1921.

7588. MAURER, FR. Zur Frage von der Vererbung erworbener Eigenschaften. [Inheritance of acquired characters.] *Anat. Anzeiger*, 54: 201-205. 1921.

7589. MAVOR, J. W. Elimination of the X-chromosome from the egg of *Drosophila melanogaster* by X-rays. *Proc. Soc. Exp. Biol. and Med.* 18: 301-302. 1921.—(See also Bot. Absts. 11, Entry 284.)

7590. MAVOR, JAMES W. The attack on the gene. *Sci. Monthly* 21: 355-363. 1925.—The author presents a general popular discussion of the mechanism of inheritance and sex determination. Results of Stockard, Guyer, Little, and workers on *Drosophila* are reviewed briefly. The author points out that chemical and physical processes governing distribution and segregation of genes yield readily to modification and control by modern technical methods. The difficulty lies in applying such methods so as not to destroy the life of the cell. He treated *Drosophila* of known hereditary make-up with X-ray. This resulted in the elimination of the X chromosome from the egg or the formation of mature eggs with 2 X chromosomes. It also decreased the rate of crossing-over. There is no evidence that any gene was altered.—*Anna R. Whiting.*

7591. MAVOR, JAMES W. The production of non-disjunction by X-rays. *Science* 55: 295-297. 1922.

7592. MAVOR, J. W. What is a gynandromorph? *Sci. Amer.* 133: 322. 2 fig. 1925.

7593. MAVOR, JAMES W., AND DAVID M. DEFORREST. The relative susceptibility to x-rays of eggs and sperms of *Arbacia*. *Proc. Soc. Exp. Biol. and Med.* 22: 19-21. 1924.—Eggs and sperms of *Arbacia punctulata* were x-rayed at the same time. Subsequently the x-rayed eggs were fertilized by untreated sperms, while the x-rayed sperms were used to fertilize untreated eggs. At 48 hours after fertilization larvæ were fixed and classified according to the stage of development. Retardation of development (1) is exhibited for all dosages, (2) varies directly with the dosage, (3) is greater in embryos produced by untreated eggs × treated sperms than by treated eggs × untreated sperms.—*C. E. Keeler.*

7594. MAY, R. E. Ein Beitrag zur Frage der Geschlechtsbeeinflussung. [A contribution to the question of influencing sex.] *Berliner Klin. Wochenschr.* 58: 846-847. 1921.
7595. MEDOLAGHI, P. La previsione statistica ed il calcolo delle probabilità. [Statistical foresight and the calculus of probability.] *Metron* 1: 3-16. 1920.
7596. MEGGENDORFER, FREDERICK. Klinische und genealogische Untersuchungen über "moral insanity." [Clinical and genealogical studies on moral insanity.] *Mental Hygiene* 6: 163-165. 1922.
7597. MEISENHEIMER, JOHANNES. Geschlecht und Geschlechter im Tierreiche. [Sex and the sexes in the animal kingdom.] *xiv + 896 p., 737 fig.* Gustav Fischer: Jena, 1921.
7598. MELCHERS, LEO E., AND JOHN H. PARKER. Inheritance of resistance to stem rust in crosses between varieties of common wheat (*Triticum vulgare*). *Phytopathology* 12: 31-32. 1922.
7599. MENDES CORREA, A. A. Homo: Os modernos estudos sobre a origem do homem. [Recent studies on the origin of man.] *318 p.* Lumen Empresa Internacional: Lisbon, Oporto, Coimbra, 1921.
7600. METALNIKOV, S. Immortalité et rajeunissement dans la biologie moderne. [Immortality and rejuvenescence in modern biology.] (Bibliothèque de Philosophie scientifique). *284 p.* Ernest Flammarion: Paris, 1924.
7601. METALNIKOV, S. Sur l'hérédité de l'immunité acquise. [Inheritance of acquired immunity.] *Compt. Rend. Acad. Sci. [Paris]* 179: 514-516. 1924.—Insects (*Galleria*) were selected for this study in order to eliminate the question of transmission of passive immunity through the placenta. Caterpillars were immunized by 2 injections of dead cholera organisms. Their offspring were divided into 2 lots, one of which was immunized as before, the other subjected to such doses of living organisms as consistently proved fatal to control insects. The percentages of immunity among the tested individuals for the 9 successive generations were: 0, 0, 30, 16, 0, 42, 45, 72 and 75. The fall in the 5th generation is attributed to a slight change in technique. The results lead to the suggestion that an acquired character of this sort becomes hereditary only after several, perhaps many, generations of its development.—C. H. Danforth.
7602. MEURMAN, OLAVI. The chromosome behaviour of some dioecious plants and their relatives with special reference to the sex chromosomes. *Soc. Sci. Fennica Comment. Biol.* 2³: 1-105. 1925.
7603. MEYER, KONRAD. Beiträge zur Genetik des Weizens. [A contribution to the genetics of wheat.] *Jahrb. Landw.* 73: 241-304. 1925.
7604. MINAMI, SADA HARU. Untersuchungen über das Flügelmosaik intersexueller Männchen von *Lymantria dispar* L. [Investigations on the wing mosaics of intersex males of gypsy moth.] *Arch. Mikroskop. Anat.* 104: 25-49. *5 fig.* 1925.
7605. MINER, JOHN RICE. Note on a case of human inbreeding. *Amer. Nat.* 56: 188-189. 1922.
7606. MITSCHERLICH, EIHLE ALFRED. Das Wirkungsgesetz der Wachstumsfaktoren und das Mendelsche Vererbungsgesetz. [The law of action of growth factors and the Mendelian law of heredity.] *Zeitschr. Pflanzenzücht.* 8: 276-278. 1922.—(See also *Bot. Absts.* 13, Entry 7527.)
7607. MITTASCH, GERHARD. Über Hermaphroditismus. [Hermaphroditism.] *Beitr. Path. Anat. u. Allg. Path.* 67: 142-180. 1920.
7608. MIYAKE, K., AND Y. IMAI. On a monstrous flower and its linkage in the Japanese morning glory. *Jour. Genetics* 16: 63-76. *1 pl., 4 fig.* 1925.
7609. MIYAKE, K., AND Y. IMAI. On the inheritance of flower-colour in *Sisyrinchium angustifolium*. *Bot. Mag. Tokyo* 35: 361-365. *8 fig.* 1921.
7610. MJOEN, JON ALFRED. Zur Erbanalyse der musikalischen Begabung. [Genetic analysis of musical ability.] *Hereditas* 7: 109-128. *3 fig.* 1925.
7611. MOHLER, J. R. Runts and the remedy. *U. S. Dept. Agric. Yearbook* 1920: 225-240. *7 fig.* 1920.
7612. MOHR, OTTO L. Cases of mimic mutations and secondary mutations in the X-chromosome of *Drosophila melanogaster*. *Zeitschr. Indukt. Abstamm.- u. Vererb.* 28: 1-22. 1922.

7613. MOHR, OTTO. Den Morganske skole og dens betydning for den moderne arvelighedsforskning. [The Morgan school and its significance to modern genetics.] Ber. Mordiske Jordbrugsforskeres Foren. Kongres i Kobenhavn 1921: 234-277. 1921.

7614. MOL, W. E. DE. De l'existence de variétés hétéroploides de l'*Hyacinthus orientalis* L. dans les cultures hollandaises. [The existence of heteroploid varieties of *H. orientalis* in Dutch culture.] (Extrait Arch. Néerland. Sci. Exactes et Nat. Ser. III B, 4: 18. 1921.) Arbeit. Inst. Allg. Bot. Univ. Zürich, II sér, 2. 1-100. 13 pl. 1921.

7615. MOL, W. E. DE. Nieuwe banen voor het winnen van waardevolle varieteiten van bolgewassen. [New methods for securing valuable varieties of bulbous plants.] Weekblad voor Bloembollencultuur 31: 37, 41, 44-48. 1920.

7616. MOLDENHAWER, K. Ueber die Gattungskreuzungen *Raphanus* × *Brassica*. [The generic cross, *Raphanus* × *Brassica*.] Pam. Zak. Genet. Warszawa [Mem. Inst. Gen. Varsovie] 2: 191-196. 1924.—A short-leaved red radish crossed with a red cabbage gave a single F_1 plant showing some of the characters of each parent and lacking the extreme vigor of a similar hybrid reported by Gravatt. Selfing gave 4 F_2 plants, each of a different type; 2 were fairly fertile, 2 sterile. An F_2 population from 1 of the F_2 plants showed further segregation in leaf shape and size.—A. J. Mangelsdorf.

7617. MOLLE, J. VAN. Erfelijkheid en celbouw. [Heredity and cell structure.] Naturwetenschappelijk Tijdschr. [Antwerp] 34: 83-88. 1921.

7618. MOORE, CARL R. Sex determination and sex differentiation in birds and mammals. Amer. Nat. 59: 177-188. 1925.—The article is a review of published work by several authors. Sex-determination is primarily "zygotic" (genetic) but primary sex characters can be changed incompletely, in the direction of the opposite sex, in embryo ♂ and ♀ birds and in ♀ mammals by hormone influence, brought about by castration, gonad transplantation, or placental union. After their formation, primary sex characters remain little or not at all affected by hormones of the opposite sex, and ♂ and ♀ gonads may coexist in active state both in birds and mammals. In birds, however, a pathological condition or excision of ovary may be followed by testis formation. In both classes the formation and persistence of secondary sex characters are determined by gonad hormones, largely at least. Feather form and color and spurs depend on presence or absence of ovary; head furnishings and behavior are influenced by both gonads. In mammals, organs peculiar to one sex remain unaffected by mere implantation of a gonad of the opposite sex, but secondary sex organs common to, yet different in, the 2 sexes become more developed when a gonad of the sex having greater development of the organ is implanted; retrogression of an organ requires the removal of a gonad of the sex having the organ more developed. Psychic sex characters of mammals may, however, persist long after gonad alteration. The author designates sex not shown by an individual as "recessive," every individual having "bisexual potentialities;" he regards the hormonal factor "as a second and supplementary factor" in sex differentiation, acting to reinforce the "zygotic sex-determining factors."—H. J. Muller.

7619. MOREAU, F., ET A. DUSSEAU. Les lignées pédigrées vieillissent-elles? [Do pedigree lines grow old?] Bull. Soc. Bot. France 72: 163-168. 6 fig. 1925.

7620. MORGAN, LILIAN V. Non-criss-cross inheritance in *Drosophila melanogaster*. Biol. Bull. [Marine Biol. Lab., Woods Hole] 42: 267-274. 3 fig. 1922.

7621. MORGAN, T. H. The mechanism of heredity. Nature 109: 241-244, 275-278, 312-313. 16 fig. 1922.

7622. MORGAN, T. H., A. H. STURTEVANT, AND C. B. BRIDGES. Study of the constitution of the germ-plasm in relation to heredity. Carnegie Inst. Washington [D. C.] Year Book 20: 375-380. 1921.

7623. MORGAN, T. H., A. H. STURTEVANT, AND C. B. BRIDGES. The constitution of the germ material in relation to heredity. Carnegie Inst. Washington [D. C.] Year Book 24: 286-288. 1925.

7624. MORTENSEN, THEODOR. On hermaphroditism in Oviparous ophiurids. Acta Zool. 1920: 1-18. 1 pl. 1920.

7625. MORTON, F. Nachträge zur Kenntnis von *Phyllitis hybrida*. [Contribution to our knowledge of *P. hybrida*.] Oesterreich. Bot. Zeitschr. 74: 244-247. 1925.

7626. MRŠIĆ, WILHELM. Die Spätebefruchtung und deren Einfluss auf Entwicklung und Geschlechtsbildung, experimentell nachgeprüft an der Regenbogenforelle. [Delayed fertilization and its influence on the development of sex differentiation experimentally proved on rainbow trout.] Arch. Mikrosk. Anat. 98: 129-203. 22 fig. 1923.

7627. MUCKERMANN, H. Aus der Keimzellforschung. [Germ cell investigation.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 260-261. 1922.

7628. MULLER, H. J. The regionally differential effect of X-rays on crossing-over in autosomes of *Drosophila*. Genetics 10: 470-506. 6 fig. 1925.

7629. MUNERATI, OTTAVIO. Osservazioni e ricerche sulla barbabietola da zucchero. [Observations and investigations on the sugar beet. Part I.] R. Accad. Lincei 13: 177-322. 12 pl., 6 fig. 1920.

7630. [MURAVIEV, V. P.] Муравьев, В. П. Селекция гречихи на Удичской сортоводной станции. [Selection of buckwheat at Udichska's plant breeding station.] Бюл. Сорт.-сем. Управ. Сахаропроцста. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 78-81. 1924.—The purpose of selection was the establishment of forms hardy to late frosts, resistant to drought, having a shorter flowering period and producing larger seed or seed with a thinner seed coat.—*M. Demerec*.

7631. MYERS, C. H., H. H. LOVE, AND F. P. BUSSELL. Production of new strains of corn for New York. New York [Cornell] Agric. Exp. Sta. Bull. 408. 209-268. 12 fig. 1922.

7632. NACHTSHEIM, H. Kern und Plasma in ihrer Bedeutung für die Vererbung. [Nucleus and cytoplasm in their significance for heredity.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 249-251. 1922.

7633. NADSON, G. A., ET G. S. PHILIPPOV. Influence des rayons X sur la sexualité et les formation des mutantes chez les champignons inférieurs—Mucorinées. [The effect of X-rays on the sexuality and the formation of mutants in the lower fungi (Mucorineae).] Compt. Rend. Soc. Biol. 93: 473-475. 1925.—When *Zygorhynchus moelleri* is radiated with X-rays for 10-45 minutes the production of zygospores is totally suppressed. When *Mucor genevensis* is treated for the same period the production of zygospores is hindered but not entirely stopped and if it is radiated only slightly the original culture becomes divided into 2 strains. One produces many zygospores and few sporangia while the other produces many sporangia and few zygospores. The latter strain is much richer in fat globules than the former. The characters were conserved for 12 and 9 generations and the author feels justified in calling them mutants.—*Oran Raber*.

7634. NĚMEC, B. O potomstvu pražských samičích jehlančových topolů. [The descendants of some female pyramidal poplars.] Studia Mendeliana. 1923: 169-174. Typos: Brünn, 1923.—In 1906 B. Münzberger called attention to 3 hybrid poplar trees on the island in the Vltava River at Prague. In the Botanic Garden of the University and in other gardens, seed from these trees produced seedlings of 2 kinds, both of which must be regarded as heterozygotes. It is often thought that the pyramidal poplar originated by a fastigate mutation from the black poplar. By this mutation ♂ and ♀ black pyramidal poplars have been produced. The heterozygous ♂ pyramidal poplar and the pyramidal poplar give these types again in the 1st generation. This hybridization has no doubt given rise to the semi-pyramidal poplar trees of southern Bohemia.—*Courtesy of Preslia (transl. by Mary Ellen Peck)*.

7635. NĚMEC, B. Zúrodnění u Gagea bohémica. [Fertility in *Gagea bohémica*.] Vestník Kralovské české Společnosti Nauk 2: 1-8. 1 fig. 1923.—*Gagea bohémica* blooms often but never sets seed. The author has observed plants coming from widely separated regions and has concluded that the species is incapable of producing seed. Generative reproduction is wholly replaced by vegetative reproduction. The development of seed is prevented by internal causes some time after fertilization.—*Courtesy of Preslia (transl. by Mary Ellen Peck)*.

7636. NEWBOLD, E. M. Notes on an experimental test of errors in partial correlation coefficients, derived from 4-fold and biserial total coefficients. Biometrika 17: 251-267. 1925.—Comparison of partials based on 4-fold and biserial totals with partials based on product moment totals. The chief danger is for very high values of the secondary totals. For true sampling errors, there appears to be no danger in high total coefficients.—*J. R. Miner*.

7637. NEWMAN, HORATIO HACKETT. Evolution, genetics and eugenics. Rev. Ed. xx +

639 p. 99 fig. Univ. of Chicago Press: Chicago, 1925.—This work aims to present an impartial survey of evolution, genetics and eugenics through a carefully arranged and selected series of excerpts, some long and some short, from both the older classical evolutionary writers and the modern writers. This material is unified through the aid of various editorial connecting passages, introductory statements, criticisms, summaries, and special short chapters dealing with subjects otherwise not adequately treated in small compass. Among those represented by excerpts are Darwin, Wallace, de Vries, Le Conte, J. Arthur Thomson, Conklin, Saleeby, Guyer, Lull, Osborn, Shull, Popenoe, Muller, Babcock, Clausen, Kellogg, the Coulters, T. H. Morgan, and A. E. Wiggam. The subject matter is arranged under 5 divisions—Introductory and historical, including a chapter on the anti-evolution campaign in the U. S. A.; evidences of organic evolution; the causal factors of organic evolution; genetics; eugenics. Bibliography, glossary and index are appended. The revised edition includes among other new features an account of the Scopes trial and the anti-evolution campaign, and modernized chapters on linkage and crossing-over, and on mutation. A chapter by A. E. WIGGAM on eugenics has also been added.—*Orland E. White.*

7638. NEWMAN, H. H. The experimental production of twins and double monsters in the larvae of the starfish, *Patiria miniata*, together with a discussion of the causes of twinning in general. Jour. Exp. Zool. 33: 321-352. 46 fig. 1921.—(See also Bot. Absts. 8, Entry 307.)

7639. NILES, HENRY R. Correlation, causation and Wright's theory of "path coefficients." Genetics 7: 258-273. 9 fig. 1922.

7640. NILSSON, MARTIN P. The race problem of the Roman empire. Hereditas 2: 370-390. 1921.

7641. NILSSON-LEISSNER, GUNNAR. Beiträge zur Genetik von *Triticum Spelta* und *Triticum vulgare*, I. [Contributions to the genetics of *T. Spelta* and *T. vulgare*.] (English summary.) Hereditas 7: 1-74. 19 fig. 1925.—Progenies of the crosses, Swedish Velvet wheat \times bearded autumn spelt wheat and Iron wheat II \times bearded spring spelt wheat have been investigated. The 1st generation of both crosses was intermediate in all essential spelt characters, while the 2nd generation of the first mentioned cross showed a segregation of 3 spelt: 1 vulgare type. In the other cross progeny a ratio of about 10 spelt: 6 vulgare was obtained. By testing the F_2 families it was shown that several of the vulgare-like plants were heterozygotes and that the ratio in F_2 , also in this case should be 3:1. The degree of speling of the heterozygotes seems to be directly correlated with the length of the ear internodes in such a way that the later the ears the more speltlike the plants, and vice versa. Thus in F_3 , ratios of 3:1, 1:2:1 and 1:3 could be found. An interpretation of the relation of the so-called speltoids to *R. Spelta* was tried. Six chimeral ears, containing both *Spelta* and vulgare-like parts, have been found in the cross-progenies. As far as investigation goes, it seems as if the kernels of these ears were not influenced by the forming of the chimeras. Only the outer gumes appeared to have been changed. In accordance with other authors' results, an apparent lengthening power of the ear internode of the spelt gene or of a gene closely linked with the latter, was proved. The segregations into dense and lax forms appeared to be rather complicated. Recessive compactum-like forms were obtained in the 2nd and following generations. Some investigations have been carried out concerning 2 types of ear—ramifications and the forming of additional spikelets in the ears. All 3 characters were inherited but they were also much influenced both by the interaction of other genes and by environmental factors. In the cross, Iron wheat II \times spring spelt there seemed to be 2 multiple factors for spring habit involved.—*Author.*

7642. NITSCHÉ, MAX. Untersuchungen über fossile Schweinereste Böhmens und ihre Beziehung zu dem autochthonen Landschwein der Iglauer Sprachinsel. [Investigations concerning Bohemian fossil swine remains and their relation to the primitive native swine of the "Sprachinsel" of Iglau.] Zeitschr. Indukt. Abstamm.- u. Vererb. 36: 59-94. 27 fig. 1924.—The Bohemian fossil swine remains contain a neolithic form which is to be regarded as a descendant of the wild hog at the beginning of its domestication. The fossil swine of Tschentschitz represents a reverted form resembling or descended from the Swedish peat hog probably imported at the beginning of modern times and appearing only sporadically. The native swine of Iglau is to be regarded from the point of view of descent as an improved domesticated

form of the neolithic Bohemian hog containing, in addition, a small admixture of the Yorkshire breed which is more obvious in the younger animals.—*L. R. Waldron.*

7643. NOHARA, S. Genetic studies on *Spinacia*. (Japanese.) *Indengaku Zassi*. [Japanese Jour. Genetics] 2: 45-54. 1923.

7644. NONIDEZ, J. F. Studies on the gonads of the fowl. I. Hermapopioetic processes in the gonads of embryos and mature birds. *Amer. Jour. Anat.* 28: 81-107. 3 pl. 1920.

7645. OEHLKERS, FRIEDRICH. Vererbungsversuche an *Oenothera* I. *Oenothera Cockerelli* Bartlett und ihre Kreuzungen. [Genetical studies on *Oenothera* I. *O. cockerelli* Bartlett and its hybrids.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 26: 1-31. 7 fig. 1921.

7646. OLIVER, GEORGE W., AND ALFRED CARL HOTTES. *Plant culture*. 4th ed. 444 p. 1920.

7647. ONSLOW, H. A note on the inheritance of the "steel" coat-colour in rabbits. *Jour. Genetics* 12: 91-99. 1922.

7648. ONSLOW, H. The inheritance of wing-colour in *Lepidoptera*. VI. *Diaphoramendica* CL. and var. *Rustica* HB. *Jour. Genetics* 11: 277-292. 1 pl., 10 fig. 1921.

7649. ONSLOW, H. The inheritance of wing-colour in *Lepidoptera*. VII. *Melanism* in *Hemerophila abruptaria* (var. *Fuscata* Tutt.) *Jour. Genetics* 11: 293-298. 1 pl. 1921.

7650. OPPENHEIM, F. Birth and death ratios of the Chinese. *China Jour. Sci. and Arts* 2: 466-477. 1924.

7651. OSBORN, HENRY FAIRFIELD. Orthogenesis as observed from paleontological evidence beginning in the year 1889. *Amer. Nat.* 56: 134-143. 1922.

7652. OSBORN, HENRY FAIRFIELD. William Bateson and Darwinism. *Science* 55: 194-197. 1922.

7653. PAINTER, THEOPHILUS S. Studies in mammalian spermatogenesis. I. The spermatogenesis of the opossum (*Didelphys virginiana*). *Jour. Exp. Zool.* 35: 13-38. 3 pl., 8 fig. 1922.

7654. PAP, ENDRE. Über Vererbung von Farbe und Zeichnung bei dem Kaninchen. [Inheritance of color and color pattern in rabbits.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 26: 185-270. 20 fig. 1921.

7655. PARKER, R. N. A hybrid *Terminalia* (*Tarjuna* × *tomentosa*); and some general remarks on tree hybrids. *Indian Forest* 51: 599-603. 1925.—Seed of 2 hybrid *Terminalias* (*T. arjuna* × *T. tomentosa*) gave an F_2 seedling generation ranging in appearance from *T. tomentosa* to *T. arjuna*, the majority approximating *T. tomentosa*. The author considers the F_2 generation a more indicative test of hybridity than anatomical examination of the hybrid and its supposed parents or the reproduction of the hybrid from its supposed parents by artificial fertilization. He notes the possibility of a hybrid breeding true and the occurrence of sports which may be confused with such hybrids.—*Mary Ellen Peck.*

7656. PARKES, ALAN S. Sex heredity. With special reference to abnormal numerical inequality between the sexes. *Science Prog.* 15: 590-600. 1921.

7657. PARNELL, F. R. Note on the detection of segregation by examination of the pollen of rice. *Jour. Genetics* 11: 209-212. 1 pl. 1921.

7658. [PASHKEVICH, V. V.] Пашкевич, В. В. Материалы к вопросу о влиянии собственной и посторонней пыльцы разных сортов яблок на завязывание и вызревание плодов. [The effect of self-pollination and the pollen of different varieties of apples on the setting and ripening of fruits.] (English summary.) Труды Прикл. Бот. Селекции. [Bull. Appl. Bot. & Plantbreed.] 14: 91-103. 1924-1925 [1925].—Through the initiative of the Bureau of Applied Botany and New Cultures (Leningrad) experiments with self- and cross-pollination of various apple races were undertaken in different provinces of Russia. Some of the varieties when self-pollinated proved entirely sterile (Grushevka, Reinelle Skaljanka, etc.). Other varieties (Titovka) at self-pollination remained sterile in the South, and yielded a very high percentage of fruit in the North (63%). Cross-pollination between several varieties has shown that productivity depends on the mutual relation of various races, the minimum productivity being about 2.4% (*Antonovka* × *Borovinka*) and high productivity reaching about 43% (*Titovka* × *Antonovka*).—*S. Satina.*

7659. PATTEN, MARY W. Amicronucleate race of *Didinium nasutum*. *Proc. Soc. Exp. Biol. Med.* 18: 188-189. 1921.

7660. PAULSEN, J. *Beobachtungen an eineiigen Zwillingen*. [Observations on monozygotic twins.] *Arch. Rass.- u. Ges. Biol.* 17: 165-170. 1925.—Histories of pathologies and physical conditions of 11 pairs of supposedly identical twins are given. Large birth-weight differences were common; so also were moderate size differences in later life. These 2 differences were perhaps connected, though an early difference could be made up. There was 1 case of distinct difference in head and face dimensions (not evident at all ages). Marked nutritional weakness, confined to 1 member of a pair, appeared in infancy in 3 cases, in 1 case (breast fed) following exudative eczema confined to that twin. In 1 of the 2 other cases (both of which were bottle fed) 1 member of the pair was much more affected by rickets, adenoids, squinting, and strabismus, than the other. One case of differences in mental proclivities was noted. On the whole, incidence and the course of diseases were remarkably alike. Menses tended to run parallel, also time of learning to walk, puberty, appearance of wisdom teeth, and graying of hair.—*H. J. Muller*.

7661. PAULSEN, J. *Kasuistische Beiträge zur Vererbungslehre*. [Miscellaneous contributions to genetics.] *Arch. Rass.- u. Ges. Biol.* 16: 304-308. 1925.

7662. PEARL, RAYMOND. A note on the inheritance of duration of life in man. *Amer. Jour. Hygiene* 2: 229-233. 1 fig. 1922.

7663. PEARL, RAYMOND. The effect of the war on the chief factors of population change. *Science* 51: 553-556. 1920.

7664. PEARL, RAYMOND. The vitality of the peoples of America. *Amer. Jour. Hygiene* 1: 592-674. 17 fig. 1921.

7665. PEARL, RAYMOND, AND SYLVIA LOUISE PARKER. Experimental studies on the duration of life. I. Introduction to discussion of the duration of life in *Drosophila*. *Amer. Nat.* 55: 481-509. 6 fig. 1921.

7666. PEARL, RAYMOND, AND SYLVIA L. PARKER. Experimental studies on the duration of life. II. Hereditary differences in duration of life in line-bred strains of *Drosophila*. *Amer. Nat.* 56: 174-187. 2 fig. 1922.

7667. PEARSON, E. S. Bayes' theorem, examined in the light of experimental sampling. *Biometrika* 17: 388-442. 5 fig. 1925.—Experiments give good agreement of observed with expected in 2nd samples. The distribution of a priori probabilities is somewhat U-shaped in the examples studied, instead of constant. This does not affect markedly the values obtained on the assumption of constant distribution.—*J. R. Miner*.

7668. PEARSON, KARL. A new white-lock family (Barton's case). *Biometrika* 13: 347-349. 2 pl. 1921.

7669. PEARSON, K. Further contributions to the theory of small samples. *Biometrika* 17: 176-199. 1925.—The author investigates for samples from a bi-variate normal population (1) correlation of standard deviations (a) with each other, (b) with correlation coefficient; (2) mean and standard deviation of (a) regression coefficient, (b) standard deviation of arrays. Regression of correlation on standard deviation is non-linear, even for n large. Mean regression coefficients of samples equal regression coefficients of sampled population. Formulas for standard error of regression coefficient, mean standard deviation of arrays, and standard error of standard deviation of arrays, are given.—*J. R. Miner*.

7670. PEARSON, K. On first power methods of finding correlation. *Biometrika* 17: 459-469. 1925.—A "linear" correlation ratio is developed for use when 1 character is qualitative and the other quantitative. Although derived on the assumption of normal correlation, "linear" ratio gives good results when tested on skew distributions. Median array should be as small as feasible. In sampling uncorrelated populations, "linear" ratio varies about zero.—Dividing normal frequency surface into quadrants, Pearson derives various 1st power formulas for correlation coefficient. One of these is Lenz's "deutsche Korrelations-Index." A test shows that these formulae are less accurate and more laborious than product moment method.—*J. R. Miner*.

7671. PEARSON, K. On the multiple correlation of brothers, being a note on Mr. J. O. Irwin's memoir, and on my statement of the application of Galton's difference problem to the determination of the degree of relationship of brothers, made in August, 1902. *Biometrika* 17: 129-141. 1925.

7672. PEARSON, KARL. Table of ordinates of the normal curve for each permille of frequency. *Biometrika* 13: 426-428. 1921.

7673. PEASE, M. S. Some recent work on *Avena*. *Zeitschr. Indukt. Abstamm.- u. Vererb.* 27: 142-146. 1921.

7674. PÉE-LABY, ERNEST. Les hybrides producteurs et le mildiou en 1925. [Hybrid producers and mildew in 1925.] *Vie Agric. et Rur.* 27: 391-392. 1925.

7675. PELL, C. E. The law of births and deaths: being a study of the variation in the degree of animal fertility under the influence of the environment. 192 p. T. Fischer Unwin: London, 1921.

7676. PELSENEER, PAUL. Les variations et leur hérédité chez les mollusques. [Variations and their inheritance among molluscs.] *Mem. Acad. Roy. Belgique Cl. Sci. Ser. II*, 5: 1-826. 286 fig. Brussels, 1920.

7677. PERRIRAZ, J. Cas de tératologie héréditaire. [A case of hereditary teratology.] *Bull. Soc. Vaud. Sci. Nat.* 53: 50-51. 1921.

7678. [PETROV, A. V.] Петров, А. В. Опыты над влиянием самоопыления и перекрестного опыления на завязывание и изменчивость плодов у яблонь. [Experiments on the influence of self-pollination and cross-pollination on the forming and the variation of the apple fruit.] (English summary.) *Труды Прикл. Бот. Селекции.* [Bull. Appl. Bot. & Plant-breed.] 14³: 104-118. 9 fig. 1924-1925 [1925].—Experiments which were undertaken at the Myssow Experiment Station near Moscow to determine the degree of sterility by self-pollination have shown, in the varieties of apple Antonovka, Boravinka and Grushevka, no fruit development. Cross-pollination with 6 apple varieties taken as ♀ parents with 7 varieties taken as ♂ parents have shown in general a high degree of productivity. These experiments indicate also that the weight of hybrid fruits, and the shape, taste and number of seed developed depend on the kind of ♂ parent. Photograph and drawings show characteristic samples of 2nd order xenias with "Antonovka" under the influence of pollen of "Arkad Lond Yellow" and "Boravinka."—*S. Satina*.

7679. PÉZARD, A. Modifications périodiques ou définitives des caractères sexuels secondaires chez les Gallinacés. [Periodical and definitive modifications of the secondary sexual characters in the Gallinaceae.] *Ann. Sci. Nat. Zool.* 5: 83-104. 14 fig. 1922.

7680. PHILIPTSCHENKO, JUR. Über Spaltungsprozesse innerhalb einer Population bei Panmixie. [Segregation within a population mixing at random.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 35: 257-278. 1924.—The author refers to the proposition of Pearson that the several types in a Mendelian population in which the F_2 generation was composed of 25% AA , 50% Aa , and 25% aa , maintains a constant proportion in subsequent generations under conditions of random mating and no selection. In a dihybrid there are 4 types of gametes produced: $AB(a)$, $Ab(b)$, $aB(c)$, $ab(d)$. The proportion of the various types appearing in the F_2 generation remains constant in subsequent generations only when $ad = bc$. When $ad \geq bc$ the several types of zygotes appear in different proportions in the following generations until the shifting of factors within the gametes makes the numerical value of ad equal to that of bc , when the proportion of the various types becomes constant. A segregation of types under like conditions is shown to occur in the trihybrid. It is concluded that in certain polyhybrid crosses in which the gametes are not in this concordant relation, as could happen in nature when 2 races cross, the proportion of the various phenotypes in the population will alter from generation to generation until a concordant condition of the gametes, that is, $ad = bc$, etc., is reached. The author holds it to be possible that certain changes in the human population revealed by statistical studies are in part due to this segregation which under certain conditions accompanies panmixis.—*Conway Zirkle*.

7681. PIRÖVANO, ALBERTO. La mutazione elettrica delle specie botaniche e la disciplina dell' eredità, nell'ibridazione. [Electrical mutation of botanical species and the science of heredity in hybridization.] vii + 288 p., 114 fig. U. Hoepli: Milano, 1922.—Up to date, electricity has not been shown useful for cultures through direct application. Because of the ill effects of direct application of electricity the author chose an indirect method—the electro-magnetic. The work described is practically all with pollen. The 2nd chapter discusses variations as induced by cultural conditions, and the mutations of deVries. Paral-

lelism is drawn between natural mutations and variations induced by electro-magnetic ionizations ("jonolisi"). Chapter 3 is theoretical. The author postulates that atoms of living plasm and their ions have an electrical charge similar to that of inert matter. The vitality which has its seat in the renewal of germplasm is comprised of physiological elements in the guise of unstable complements of the sexual elements. Gametic structure is likened to a minute geometrical edifice, always alike in each sexual cell of the same species and sex. Ionization by action on electrical charges provokes molecular dismemberment and with it the collapse of the specific gametic structure. Moderate modification of molecular composition of chromosomes by ionization results in proportional morphological variations in the descendants. Vitality is electrically dependent. Electrical forces govern molecular cohesion and atomic kinetics. There are electro-atomic effects on the order and structural concatenation of the most minute living particles.—Chapter 4 enlarges on the term "jonolisi" or ionizations which are the rhythmic displacement of the ions brought about in the germplasm by variations in the magnetic field. These variations are comparable to those obtained with various rays. They are all forms of molecular dismemberments in living fluids, and are similar to electrolysis. Magnetic ionizations are superior to those induced by means of rays because they can be graduated in frequency and intensity. They furnish a means for affecting germplasm without destroying its vitality; they can produce the indefinable stage intermediate between life and death. Possibility of electro-magnetic ionization in plasm is subordinated to 3 principal requisites: (1) existence of labile groups of molecules which may abound or be lacking, according to species or pollen; (2) determination of the critical point of dissolution for each molecular group in relation to the magnetic field; (3) occurrence of the labile groups in positions useful for electrical advances, induced by the variations in the magnetic fields. Magnetic ionization is obtained in tender tissues; it is affected by atomic and interatomic mass (data lacking) and probably not by size of pollen. Large seminal cells of Mammiferae are more rapidly devitalized than those of pollen. Chapter 5 discusses electro-magnetism and furnishes a detailed illustrated description of various kinds of electro-magnetic apparatus for treatment of pollen and anthers.—The remaining chapters illustrate in detail the effects of treatment. Some seed apparently well developed do not germinate, others normal in appearance germinate but produce spindling plants, others are perfect and produce good plants. Fruit size and shape show modifications. Various species of some 18 genera of flowering plants were used in these experiments. In general, the nearer the treatment came to causing death, the more striking the modifications were. Some forms were found much more responsive to treatment than others. The ultimate possibilities of the treatment are believed to be in influencing pollen so that the dominant characters become recessive. The author concludes that ionization has unimagined potentialities in changing dominants to recessives, in producing mutations, in changing sterility to fertility and in increasing vigor and size. He does not wish to claim too much for something so comparatively untried, but believes his results justify a hopeful outlook for future research study of living matter.—*Helen Deuss Hill.*

7682. PLAHN, H. Die histologische Beschaffenheit des Wurzelkörpers der Beta-Rüben im Sinne züchterischer Auslese. [The histological character of the root of beets from the viewpoint of selection for improvement.] *Zeitschr. Pflanzenzücht.* 8: 195-205. 1921.

7683. PLATE, L. Bemerkungen über die deszendenztheoretische Bewertung der Umwandlungen von *Planorbis multiformis*. [Comments on the evolutionary significance of the polymorphism of *P. multiformis*.] *Jenaische Zeitschr. Naturwiss.* 56: 217-224. 1920.

7684. POISSON, R. Brachyptérosme et aptérisme dans le genre *Gerris*. [Broad-wingedness and winglessness in *Gerris*.] *Compt. Rend. Acad. Sci. [Paris]* 173: 947-950. 1921.

7685. POISSON, R. Spermatogenèse et chromosome exceptionnel chez *Naucoris maculatus* Fab. [Spermatogenesis and exceptional chromosome in *N. maculatus*.] *Compt. Rend. Acad. Sci. [Paris]* 172: 873-875. 1921.

7686. POLANO, OSCAR. Über wahre Zwitterbildung beim Menschen. [True hermaphroditism in man.] *Zeitschr. Geburtsh. Gynäkol.* 83: 114-150. 1920.

7687. POLL, HEINRICH. Das Zahlenverhältnis der Geschlechter bei Vogelmischlingen. [Sex ratios in hybrid birds.] *Jour. Ornithol.* 69: 512-526. 1921.

7688. POLOZOW, WERA. Über die Wirkung der Alkoholnarkose auf die Entwicklung der Seeigelleier. II. Polysyncytien. [Effect of alcohol narcosis on the development of sea urchin eggs. I. Polysyncytials.] Arch. Mikrosk. Anat. 103: 1-65. 47 fig. 1924.—Sea urchin eggs from *Strongylocentrotus lividus* in the 2-, 4-, 8-, 16-, and 32-cell stage were placed in 2½-3% alcohol for 1½-4 hours, and examined in vivo and in serial section. It was found that the altered and often abnormal chromosome counts in the mono- and polysyncytials offer no hindrance to further development provided no damaging chromosome combinations exist in the blastomeres. In the latter case, development may proceed if the regulatory organization causes an elimination from the nuclear contents of such combinations. The important life properties of a cell in regard to blastomeres, motive power, division capacity and regulation is not referable to any particular chromosome as a material substrate of heredity, but must be considered an inseparable fundamental of the "living system" of the cell as a whole. A copious bibliography is provided.—H. C. Sands.

7689. PORTERFIELD, W. M. Correlated factors in *Chrysanthemum leucanthemum* with special reference to number of ray florets and branch height. China Jour. Sci. and Arts 1: 68-78. 1923.

7690. PORTIER, P., ET R. DE RORTHAYS. Disparition spontanée de certains caractères sexuels secondaires chez un Coq. Étude histologique du testicule. [Spontaneous disappearance of certain secondary sexual characters in a cock. Histological study of the testis.] Compt. Rend. Soc. Biol. 85: 444-446. 1921.

7691. PRELL, H. Das Problem der Unfruchtbarkeit. [The problem of unfruitfulness.] Naturwiss. Wochenschr. 20: 440-446. 1 fig. 1921.

7692. PRELL, H. Der Mendelismus als Lehre von der idionomen Merkmalswiederkehr. [Mendelism as the doctrine of the recurrence of identical characters.] Studia Mendeliana. P. 316-363. 4 fig. Typos: Brünn, Czechoslovakia, 1923.

7693. PRELL, HEINRICH. Die fundamentalen Prinzipien Regeln und Typen der alternativen Vererbung. [The fundamental principles, rules, and types of alternative inheritance.] Zool. Anzeiger 54: 249-262. 1922.

7694. PRELL, HEINRICH. Zur Begriffsbildung in der Phäno-genetik. [Concept formation in phenogenetics.] Zoolog. Anzeiger 54: 218-224. 9 fig. 1922.

7695. PRZIBRAM, HANS. Das Anwachsen der relativen Schwanzlänge und dessen Temperaturquotient bei den Ratten, *Mus (Epimys) decumanus* Pall. und *M. (Ep.) rattus* L. (Die Umwelt des Keimplasmas XIV.) [The increment of the relative tail length and its temperature quotient in rats. (The environment of the germ plasm. XIV.)] Arch. Mikrosk. Anat. 104: 612-633. 1 fig. 1925.

7696. PRZIBRAM, HANS. Die Schwanzlänge der Nachkommen temperaturmodifizierter Ratten, *Mus (Epimys) decumanus* Pall. und *M. (E.) rattus* L. (Die Umwelt des Keimplasmas XIII.) [Tail length of the progeny of temperature-modified rats. The environment of the germplasm. XIII.] Arch. Mikroskop. Anat. 104: 549-580. Fig. 1. 1925.

7697. PRZIBRAM, HANS. Direkte Temperaturabhängigkeit der Schwanzlänge bei Ratten, *Mus (Epimys) decumanus* Pa. und *M. (E.) rattus* L. (Die Umwelt des Keimplasmas. XI.) [The temperature dependence of the tail length in rats, *Mus decumanus* Pall. and *Mus rattus* L.] Arch. Mikroskop. Anat. 104: 434-496. 1925.

7698. PRZIBRAM, HANS. Physiologie der Anpassung. [Physiology of adaptation.] Ergeb. Physiol. 19: 391-447. 1921.

7699. PRZIBRAM, HANS. Temperaturnunabhängigkeit der weiblichen Periode und Gravidität bei Ratten, *Mus decumanus* und *M. rattus*. (Die Umwelt des Keimplasmas VII.) [Temperature dependence in the female period and gestation in rats, *Mus decumanus* and *M. rattus*. (The environment of the germplasm VII.)] Arch. Entwicklungsmech. 48: 166-204. 1921.

7700. PRZIBRAM, HANS. Teratologie und Teratogenese nach Vorlesungen, gehalten an der Wiener Universität im Wintersemester 1911-1912. [Teratology and teratogenesis, from lectures given at the University of Vienna in winter semester 1911-1912.] Arch. Entwicklungsmech. Org. 1920: 1-90. 1920.

7701. PRZYBOROWSKI, JOSEF V. Genetische Studien über *Papaver somniferum* L. I. [Genetical studies on *P. somniferum*.] Zeitschr. Pflanzenzücht. 8: 211-236. 1922.

7702. PUNNETT, R. C. Research in animal breeding. I-IV. Jour. Min. Agric. London 28: 11-17, 1 pl., 1 fig.; 110-116. 1 pl., 2 fig.; 252-259. 2 pl., 2 fig.; 326-334. 1 pl., 1 fig. 1921.
7703. PUNNETT, R. C., AND M. S. PEASE. Genetic studies in poultry. IV. On the barred plumage of certain breeds. Jour. Genetics 11: 235-240. 1 fig. 1921.
7704. QUAGLINI, L. Experimentation in the crossing of sugar cane. La Planter 66: 239. 1921.
7705. QUAGLINI, LUIGI. Fecundacion artificial de la caña de azucar. [Artificial fertilization of sugar cane.] Sugar 22: 431-432. 1 fig.; Revist. Agric. Com. y Trob. 3: 44-46. 1920.
7706. RABAUD, ETIENNE. L'hérédité. [Heredity.] 190 p. 34 fig. Armand Colm: Paris, 1921.
7707. [РАКОТЧЫ, В. А.] Ракочи, В. А. К вопросу о корреляции между морфологическим характером листовой пластинки и развитием полезных признаков у сахарной свеклы. [Correlation of morphological characters of leaves and productiveness in sugar beets.] Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 197-219. 1924.—Using sugar beets grown in 1923 at Nemertchanka Experiment Station a positive correlation was found between the smoothness of the leaves and the sugar content, and a negative correlation between the smoothness of leaves and the average weight of roots.—*M. Demerec.*
7708. RAMMNER, WALTER. Die Bedeutung der Cladoceren für die Vererbungs- und Artbildungslehre. [The significance of the Cladoceras for genetics and speciation.] Naturwissenschaft. Umschau 11: 51-54. 1922.
7709. RANDS, R. D. Selection of a high-yielding strain of Hevea resistant to brown bast. Mededeel. Inst. Plantenziek. 1920: 1-14. 2 fig. 1920.
7710. RAUNKIAER, C. Über Homodromie und Antidromie, insbesondere bei Gramineen. [Homodromy and antidromy, especially in the Gramineae.] Biol. Meddel. Kgl. Dansk. Videnskab. Selsk. 1: 1-32. 1919.
7711. REED, LOWELL J. Correlation between any two functions of a set of variables. Amer. Jour. Hygiene 2: 227-228. 1922.
7712. REED, LOWELL J. Fitting straight lines (1). Metron 1³: 54-61. 2 fig. 1921.
7713. REICH, F. Erbllichkeit der Disposition für Magengeschwüre. [Inheritance of the tendency toward stomach ulcers.] Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 258-259. 1925.—Data are presented supplementary to an earlier article showing a tendency to inheritance of stomach ulcers in man, extending to the 5th generation. The factor is held to be dominant but the sex affected alternates from one generation to another. Such a factor is designated as an "altero-sexdominant."—*L. R. Waldron.*
7714. REID, G. ARCHDALL. Inheritance, mendelism and mutation. Nature 108: 335-337. 1921.
7715. RENNER, O. Eiplasma und Pollenschlauchplasma als Vererbungsträger bei den Önotheren. [Egg cytoplasm and pollen tube cytoplasm as carriers of heredity in the Oenotheras.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 235-237. 1922.
7716. RENNER, OTTO. Heterogamie im weiblichen Geschlecht und Embryosackentwicklung bei den Önotheren. [Heterogamy in the female sex and embryo-sac development in the Oenotheras.] Zeitschr. Bot. 13: 609-621. 5 fig. 1921.
7717. RENNER, O. Untersuchungen über die faktorielle Konstitution einiger komplex-heterozygotischer Önotheren. [The factorial constitution of certain Oenotheras with heterozygous complexes.] Bibliotheca Genetica 9: 1-168. 58 fig. 1925.—This is a study of the factor complexes making up a number of species or mutants of *Oenothera*. For the most part, the complexes have been dealt with as entities, rather than the species of which they are a part. The 1st section is devoted to the interactions of the various complexes involved, and the results of crosses between them are presented in minutest detail. On the basis of these studies, an attempt is made to analyze the complexes as to their factorial composition. Eleven sets of allelomorphs are described and symbols given to them. Some of these are lethal in the homozygous condition. The various complexes are then arranged in tabular form in order of their resemblance to one another, so that homologies between them become clear. The factors making up the complexes are classified into groups, 5 of which are relatively

certain, and 2 doubtful. Cross-over possibilities, as well as coupling, are indicated wherever these have been determined. Cross-over ratios are given, and the possible influences modifying them are discussed. The presence of telosyndesis rather than parasyndesis does not seem to the author to affect the possibility of crossing over. Factors belonging to a given complex may normally be linked when certain complexes are associated with it, but unlinked when other complexes are substituted. A long list of examples is given. In view of this phenomenon, the idea that all factors are contained in 1 chromosome is considered very unlikely. A kind of selective chromosome coupling is held the most likely explanation of the extensive linkage of factors. While 3 lethal factors have been definitely isolated, in certain complexes there is little or no evidence for the existence of gamete lethals.—*Ralph E. Cleland.*

7718. RENSCH, BERNHARD. Das Déperétsche Gesetz und die Regel von der Kleinheit der Inselformen als Spezialfall des Bergmannschen Gesetzes und ein Erklärungsversuch desselben. [Deperet's law and the rule of smallness in island forms as a special case of Bergmann's laws and a critical investigation of them.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 35: 139-155. 1924.

7719. REUTER, M. Zur Fuchs- und Hundekreuzung. [Crossing between dog and fox.] *Zeitschr. Forst.- u. Jagdw.* 56: 624-627. 1924.—Instances have been reported of possible sexual relationship between dogs and foxes, although no actual mating of these 2 heterogeneous species has been noted. The author points out that Canidae of different species never mate in the wild state. Sympathetic association may occur, but such relationship is abortive, with no actual mating.—*J. Roeser.*

7720. RICHEY, FREDERICK D. Comment on developing a high-yielding strain of corn. *Jour. Amer. Soc. Agron.* 17: 804-807. 1925.—There is no evidence that ear-to-row breeding can produce an outstanding variety of corn. It is possible that striking increases in yield may be obtained from crosses between selected self-fertilized lines.—*F. M. Schertz.*

7721. RICHEY, FREDERICK D. The experimental basis for the present status of corn breeding. *Science* 53: 344. 1921.

7722. RICHEY, FREDERICK D. The productiveness of successive generations of self-fertilized lines of corn and of crosses between them. U. S. Dept. Agric. Dept. Bull. 1354. 1-17. 8 pl., 1 fig. 1925.—Seventy F_1 crosses between lines of maize inbred for 6 generations were compared with the parent variety. Some of the crosses yielded less and others more than the parent and 3 of the crosses exceeded the parent by 30%. These 3 crosses outyielded an F_1 varietal cross, Whatley \times St. Charles White, a hybrid that has been outstanding in a number of varietal comparisons in the region of the test. Though it is necessary for practical reasons to use productive inbred lines the data indicate that there is no relation between the productiveness of the inbred lines and their yield in crosses.—*J. H. Kempton.*

7723. RISIEN, E. E. Pecan pollen. *Amer. Nut Jour.* 14: 54. 1921.

7724. ROBBINS, W. W., AND H. A. JONES. Secondary sex characters in *Asparagus officinalis* L. *Hilgardia* 1: 183-202. *Illus.* 1925.—All asparagus flowers are potentially hermaphroditic but anthers degenerate on pistillate, pistils on staminate plants, giving rise to populations which are essentially dioecious. The sex ratio is practically equal. The secondary sex characters are quantitative, the staminate plants tending to express their sex earlier than the pistillate, their first flowering shoots averaging shorter, and during the 1st and 2nd season's growth from the transplanting of the crown they produce more stalks on each crown. During the 1st harvest season the staminate plants outyield the pistillate but the average weight of individual spears from the latter exceeds that of the staminate plants.—*Margaret M. Lesley.*

7725. ROCH, GOTTHOLD. Die Vererbung der sogenannten angeborenen Hüftverrenkung. [Inheritance of the so-called congenital dislocation of the hip.] *Arch. Rass.- u. Ges. Biol.* 17: 241-255. 1925.—One hundred and eighty-nine cases are on record for 1910-1920 in hospitals in Tübingen and Leipzig. These constitute 0.28% of all surgical sicknesses. One hundred and fifteen pedigrees were obtained, of which 32 included more than 1 case. This defect occurred 5.5 times more frequently in girls than in boys. It appears to be a recessive trait, but the mode of inheritance must be complicated; multiple factors may be involved.—*E. C. MacDowell.*

7726. ROEMER, TH. Familienzucht und Vererbung, besonders bei Zuckerrübe. [Pedigree culture and heredity, especially in sugar beets.] Fühlings Landw. Zeitg. 69: 441-449. 1920.

7727. ROMANOVSKY, V. On the moments of the hypergeometrical series. Biometrika 17: 57-60. 1925.—The author derives a formula for the direct calculation of the moments useful for checking work done by Pearson's finite difference formula. Biometrika 16: 157-162. 1924.—J. R. Miner.

7728. ROMELL, LARS-GUNNAR, ET JOSEF ÖSTLIND. Sur la calculation de l'erreur moyenne de la moyenne dans certaines séries de variation. [The calculation of the probable error of the mean in certain series of variation.] Hereditas 5: 365-377. 1924.

7729. ROSA, J. T. Sex expression in spinach. Hilgardia 1: 259-274. Illus. 1925.—There are 4 main classes of plants in spinach, (1) extreme males, (2) vegetative males (unlike the extreme males these bear leaves to the top of the flowering branches), (3) rare monoecious plants which replace females in the sex ratio, and (4) females. Prickly seeded varieties give chiefly extreme males, the others chiefly vegetative males. The former flower on an average 2 weeks before the ♀ plants. Removal of smaller plants in thinning increases the number of females in the sex-ratio. Selection in favor of vegetative males is effective in prickly seeded varieties and seed from monoecious plants throw greatly increased proportions of the monoecious type. Various nutritive conditions, shading, crowding, date of planting and mutilation did not affect the sex ratio. These facts indicate that sex expression in spinach is due to genetical factors.—Margaret M. Lesley.

7730. ROSEN, F. Das Problem der *Erophila verna*. Bibliographia Genetica 1: 83-91. 1924.—In the species *Erophila verna* are found a large number of subspecies which breed true. Crosses between various subspecies gave uniform intermediate F_1 's and segregating F_2 's. F_2 plants, however, bred true and were fully fertile. Lotsy and Bauer were able to demonstrate the presence of apogamy in *E. cochleoides*. It is still uncertain, however, whether apogamy exists in *E. verna* and whether it is complete or only partial.—A. J. Mangelsdorf.

7731. ROUGE, O. DE. La selection de la pomme de terre en Bretagne. [Selection of potatoes in Brittany.] Compt. Rend. Acad. Agric. France. 11: 943-950. 1925.—The Western Agricultural Office of France carried on selection work in Brittany, where potatoes seemed little affected by degeneration diseases. A system of government seed inspection was established and 4 syndicates for the production of good seed were organized in 1924 with an official controller or director.—W. Stuart.

7732. RÜDIN, ERNST. Über rassenhhygienische Familienberatung. [Rating families for race-hygiene.] Arch. Rass.- u. Ges. Biol. 16: 162-178. 1924.

7733. RUHNAU, K. Einige anthropologische Angaben über die Bevölkerung der ostfriesischen Insel Spiekeroog. [A few anthropologic data on the population of the Island of Spiekeroog in East-Friesland.] Arch. Rass.- u. Ges. Biol. 16: 378-381. 1925.—Of a total island population of 215 persons, 198 were statistically investigated. A rather close intermarrying has taken place for about 200 years. The cephalic and face indices are determined, as well as hair and eye color, size, stature and number of births since 1900.—L. A. Waitzinger.

7734. RUNNSTRÖM, J. Heteromorphosen bei Larven von *Parechinus miliaris* und von *Cucumaria frondosa*. [Heteromorphoses in larvae of *P. miliaris* and of *C. frondosa*.] Bergens Mus. Aarbok 1917/1918 (Naturvid. Raekke 15): 1-9. 1920.

7735. RUSSEL, D. The evolution of continuity in the natural world. 278 p. Geo. Allen & Unwin: London, 1922.

7736. RUSSO, ACHILLE. Gl'individui misti formati dagli exconiuganti, dopo la coniugazione vera in *Cryptochilum echini* Maupas, e l'origine dei gametogeni. [Hybrids resulting from artificial insemination after true conjugation in *Cryptochilum echini*, and the origin of gametogenesis.] Atti. R. Accad. Lincei Roma, Rend. Cl. Sci. Fis. Mat. e Nat. 33: 377-383. 1924.

7737. S. Dlabka's Werk als Cyclamenzüchter. [Dlabka's work as Cyclamen breeder.] Gartenwelt 29: 2-4. 3 fig. 1925.

7738. SALAMAN, R. N., AND J. W. LESLEY. Genetic studies in potatoes; sterility. Jour. Agric. Sci. 12: 31-39. 1 pl. 1922.

7739. SALMON, E. S., AND H. WORMALD. A study of the variation in seedlings of the wild hop (*Humulus lupulus* L.). *Jour. Genetics* 11: 241-267. 1 pl. 1921.

7740. SAMAJA, NINO. Gozzo e paralisi del simpatico cervicale ereditari e familiari. [Hereditary and familial goitre and paralysis of the sympathetic cervical.] *Riv. Patol. Nerv. Ment.* 25: 284-297. 6 fig. 1921.

7741. SAND, KNUD. De l'hermaphrodisme expérimental. [Experimental hermaphroditism.] *Compt. Rend. Soc. Biol.* 86: 1017-1024. 6 fig. 1922.

7742. SANDS, W. N. Selection of high yielding varieties of rice in Malaya. *Rept. Proc. Imp. Bot. Conf. London, 1924*: 93-103. 1925.

7743. SARGEANT, G. R. Doubling in stocks. *Gardener's Chron.* [London] 71: 10. 1922.

7744. SATINA, SOPHIA, AND A. F. BLAKESLEE. Studies on biochemical differences between (+) and (-) sexes in *Mucors*. I. Tellurium salts as indicators of the reduction reaction. *Proc. Nat. Acad. Sci.* [Washington, D. C.] 11: 528-534. 1925.—A study is made of the capacity of the living cells of different races of heterothallic *Mucors* to absorb salts of tellurium and selenium from the nutrient medium in which these fungi are grown and to reduce them to Te and Se. Na_2TeO_3 was used in concentration of 1:5000. The relative intensity of reduction was graded in percentages of black in a color top necessary to match the mycelium. A total of 264 races were tested (13 species and 5 genera). The power of reduction had no direct relation to the sexual strength nor to the vegetative vigor of the races. The (+) sex, however, showed a greater average power of reduction than the (-) sex. For all the races studied, the average grades were 87.4 for the (+) and 80.3 for the (-) sex. In every species, except one in which the (+) and (-) races gave the same average grade, the (+) sex showed a greater average power of reduction than the (-). Within a single species, however, exceptional individual (-) races were found which were relatively strong reducers and individual (+) races which were weak reducers. It is perhaps due to non-sexual factors in respect to which the races differ that there is no simple and direct relation evident between the power of reduction possessed by a given race and its sex. The experiments have established, the authors believe, the variability of races of the same sex in respect to a biochemical character. They have demonstrated, therefore, the necessity of basing conclusions that may be drawn in regard to sex differences upon the behavior of a relatively large number of individual races. They believe that the greater average power of reduction shown by the (+) sex in comparison with the (-) is one expression of the fundamental biochemical differences between the sexes.—*Authors*.

7745. SAULI, JOHN OTTO. Erblchkeitsstudien an der Mustiala-Kohlrube. [Inheritance studies in the Mustiala kohlrabi.] 75 p. Valtioneuvoston Kirjapaino: Helsingfors, 1922.

7746. SAVORNAN, F. Les effets de la guerre sur la proportion des sexes dans les naissances. [The effect of the war on the proportion of sexes at birth.] *Scientia* 31: 57-62. 1922.

7747. SCHAFFNER, JOHN H. Influence of environment on sexual expression in hemp. *Bot. Gaz.* 71: 197-219. 1 pl. 1921.

7748. SCHALLYER, WILHELM. Vererbung und Auslese. Grundriss der Gesellschaftsbiologie und der Lehre vom Rassedienst. [Heredity and selection. Fundamentals of social biology and the science of race improvement. 4th ed., xvi + 536 p. Gustav Fischer: Jena, 1920. (See also *Bot. Absts.* 2, Entry 704.)

7749. SCHEIDT, WALTER. Die Asymmetrie der Körpergrössenkurven und die Annahme der Polymerie. [Asymmetry of body-size curves and the hypothesis of polymery.] *Arch. Rass.- u. Ges. Biol.* 16: 414-420. 1925.

7750. SCHEIDT, WALTER. Einführung in die naturwissenschaftliche Familienkunde. [Introduction to the scientific study of genealogy.] vi + 219 p. I. F. Lehmann: München, 1923.

7751. SCHEIDT, WALTER. Einige Ergebnisse biologischer Familienerhebungen. [Data on the biological raising of families.] *Arch. Rass.- u. Ges. Biol.* 17: 129-148. 8 pl., 9 fig. 1925.

7752. SCHEIDT, WALTER. Neuere Schriften zur biologischen Familienforschung. [Recent publications on biological researches relating to families.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 38: 260-269. 1925.

7753. SCHIEMANN, E. Fremd- und Selbstbefruchtung bei Bohnen nach Auslesever-

suchen. [Cross- and self-fertilization in beans shown by selection experiments.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 25: 232-251. 1921.

7754. SCHIEMANN, ELIZABETH. Genetische Studien an Gerste I. Zur Frage der Brüchigkeit der Gerste. [Genetical studies on barley. I. Brittleness of barley.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 26: 109-143. 1921.

7755. SCHIEMANN, ELISABETH. Genetische Studien an Gerste. II. Zur Genetik der breitklappigen Gersten. [Genetical studies on barley. II. Genetics of broad-glumed barley.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 27: 104-133. 1 pl., 9 fig. 1921.

7756. SCHIEMANN, E. Über die Erbllichkeit einer Anomalie bei Gerste. [Inheritance of an abnormality in barley.] *Sitzungsber. Ges. Naturf. Freunde* 1921: 53-55. 1921.

7757. SCHILLER, IGNAZ. Vererbung und Immunität. [Heredity and immunity.] *Arch. Mikroskop. Anat.* 103: 182-205. 1924.

7758. SCHLECHT, FRIEDRICH. Untersuchungen über die Befruchtungsverhältnisse bei Rotklee (*Trifolium pratense*). [Investigations on fertilization relations of red clover (*T. pratense*).] *Zeitschr. Pflanzenzücht* 8: 121-157. 3 fig. 1921.

7759. SCHLEIP, W. Über den Einfluss des Lichtes auf die Färbung von Dixippus und die Frage der Erbllichkeit des erworbenen Farbkleides. [Influence of the coloration of *Dixippus* and the question of the inheritance of acquired coat colors.] *Zool. Anzeiger*. 52: 151-160. 1921.

7760. SCHLOESSMANN, H. Die Hämophilie in Württemberg, genealogische, erbbiologische und klinische Untersuchungen an 24 Bluterfamilien. [Haemophilia in Wurtemberg; genealogical, hereditary, biological and clinical investigation of 24 families of bleeders.] *Arch. Rass.- u. Ges. Biol.* 16: 29-53, 129-161, 276-303, 353-376. 2 fig. 1924-1925.—These studies cover the period, 1912-1922. Haemophilia, usually rare, shows an unusual frequency in Württemberg. The 24 Swabian families studied had a total of 1596 individuals. In 1 family of 247 members, 19 were bleeders, 9 conductors; 6 died of the disease. Other extensive pedigrees and earlier views on its heredity are discussed. Sporadic cases are considered 1st. These are of 2 classes, those in which a single case occurs with no available data indicative of heredity, and those in which 2 or more brothers show the trait without further indication of a hereditary factor. The latter are about as common as the former, suggesting the possibility of new mutations (a) in the individual himself, or (b) in his mother. Cases in which heredity is clearly shown are in accord with the neo-Mendelian interpretation of sex linkage. Three cases of haemophiliac twins are reported. The existence of haemophiliac women is doubted, but of eugenic interest is the finding that women conductors show a delay in the completion (not beginning) of coagulation, and by this test may probably be recognized.—C. H. Danforth and L. A. Waitzinger.

7761. SCHMINCKE, A., UND B. ROMEIS. Anatomische Befunde bei einem männlichen Scheinzwitter und die Steinachsche Hypothese über Hermaphroditismus. [Anatomical discoveries in an apparent human male hermaphrodite and the Steinach hypothesis of hermaphroditism.] *Arch. Entwicklungsmech.* 47: 221-238. 4 fig. 1920.

7762. SCHNAKENBECK, WERNER. Zur Analyse der Rassenmerkmale der Axolotl. II. Die Entstehung und das Schicksal der epidermalen Pigmentträger. [Analysis of racial characters of the Axolotl. II. Origin and fate of the epidermal chromatophores.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 27: 178-226. 24 fig. 1922.

7763. SCHNEIDER, C. An interesting hybrid linden. *Garden* 89: 731. 1925.

7764. SCHRADER, FRANZ. The cytology of pseudo-sexual eggs in a species of *Daphnia*. *Zeitschr. Indukt. Abstamm.- u. Vererb.* 40: 1-27. 2 pl., 4 fig. 1925.

7765. SCHREINER, ALETTE. Zur Erbllichkeit der Kopfform. [Inheritance of head form.] *Genetica* 5: 385-454. 15 fig. 1924.

7766. SCHRIBAUX. Nouvelles avoines noires hybrides. [New hybrid black oats.] *Prog. Agric. et Vitic.* 74: 496-500. 1920.

7767. SCHULTE-VAERTING, HERMANN. Die soziologische Abstammungslehre. [Sociological genetics.] 136 p. G. Thieme: Leipzig, 1923.

7768. SCHULTZ, WALTHER. Modifikationen und Mutationen der Kaninchenfärbung. [Modification and mutation of rabbit coloration.] *Arch. Mikrosk. Anat.* 104: 89-106. 1925.

7769. SCHÜRHOFF, P. N. Zur zytologie von Melandryumzwittern. [Cytology of hermaphroditic Melandriums.] Ber. Deutsch. Bot. Ges. 43: 450-454. 1925.—The haploid chromosome number in the microspore mother cell of *Melandrium noctiflorum* is 12. An XY pair such as is found in *M. album* and *M. rubrum* could not be detected. Division of mother cells into tetrads is by furrowing.—A. E. Longley.

7770. SCHWERIN, FRITZ GRAF VON. Über rotblättrige Pflanzen. [Plants with red leaves.] Mitteil. Deutsch. Dendrol. Ges. 35: 156-163. 1925.—*Berberis vulgaris atripurpurea* produces 80% red seedlings resembling the mother species. The rest are either green or intermediates. *Fagus silvatica atripurpurea* produces 40-60% red leaved seedlings; the rest are green. The seedlings range from faint red to green. The darkest plants in spring are often reddish-olive in summer. *Ulmus campestris atripurpurea* when selfed produced 20-30% seedlings having red leaves, though not as deeply colored as the mother species. *Acer platanoides reitenbachii* produces offspring 40% of which have leaves with a red lower surface. *Acer palmatum atripurpureum ornatum* and *A. atrilineare* produce offspring 80% of which have deep red leaves resembling the mother plant. Seedlings of *A. palmatum* are very variable in relation to shape of leaves, especially var. *linearilobum*. The percentage of a pure progeny depends much upon whether the mother tree has been pollinated by green individuals of the same species in the neighborhood. Green bud sports on red-leaved varieties of trees occur less frequently than those that have a variegated foliage. The writer observed on *Betula pubescens atripurpurea* green twigs between red ones.—J. C. Th. Uphof.

7771. SEELIGER, R. Vererbungs- und Kreuzungsversuche mit der Weinrebe. [Genetic investigations with wine grapes.] Zeitschr. Indukt. Abstamm.- u. Vererb. 39: 31-163. 27 fig. 1925.

7772. SEELIGER, R. Zur Methodik der Rebenkreuzung. [Methods of grape crossing.] Wein u. Rebe. 2: 582-593. 1921.

7773. SEILER, J. Geschlechtschromosomen Untersuchungen an Psychiden. II. Die Chromosomenzyklen von *Fumea casta* und *Talaeporia tubulosa*. "Non-disjunction" der Geschlechtschromosomen. [Sex chromosome studies on Psychids. II. The chromosome cycle of *F. casta* and *T. tubulosa*. Non-disjunction of the sex chromosome.] Arch. Zellforsch. 16: 19-46. 4 fig. 1921.

7774. SEILER, J. Geschlechtschromosomen Untersuchungen an Psychiden. III. Chromosomenkoppelungen bei *Solenobia pineti*, Z. Eine zytologische Basis für die Faktorenaustausch-Hypothese. [Sex chromosomes. Investigations on Psychids. III. Chromosome union in *S. pineti*. A cytological basis for the cross-over hypothesis.] Arch. Zellforsch. 16: 171-216. 7 fig. 1922.—(See also Bot. Absts. 9, Entry 746; 13, Entry 1600.)

7775. SEILER, J. Zytologische Vererbungsstudien an Schmetterlingen; ein Beitrag zur Faktorenaustausch-(Crossing-over) Theorie. [Cytological genetical studies on butterflies; a contribution to the theory of crossing-over.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 251-253. 1922.

7776. SEILER, J., UND C. B. HANIEL. Das verschiedene Verhalten der Chromosomen in Eireifung und Samenreifung von *Lymantria monacha* L. [Different behavior of chromosomes in maturation of the eggs and in maturation of sperms of *L. monacha*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 81-103. 1 pl., 6 fig. 1921.

7777. SEREBROVSKY, A. S. "Somatic segregation" in domestic fowl. Jour. Genetics 16: 33-42. 1 pl. 1925.—A series of coloring symptoms in fowls acts as if some feathers had not the genes causing the given coloring. In the case of 2 genes localized on 1 chromosome (sex) they reveal a linkage or a repulsion according to the genetic constitution, only with the difference, as compared with the gametes, that crossing-over cannot be either proved or denied. But even if it exists, it exists in a much lower degree than in gametogenesis.—Author.

7778. SEREBROVSKY, A. S. Statistics of sex. Bull. Inst. Exp. Biol. Moscow 1: 107-113. 1921.

7779. SERGENT, EDM. Sur l'hypothèse de l'évolution des Sarcocystis du boeuf chez un insecte hématophage, hôte définitif. [Hypothesis of the evolution of Sarcocystis in a hematophagous insect, definitive host.] Compt. Rend. Soc. Biol. 85: 408-411. 1921.

7780. SEYFARTH, CARLY. Beiträge zum totalen albinismus, seine Vererbung und die

Anwendung der Mendelschen Vererbungsgesetze auf menschliche Albinos. [Contribution to total albinism, its inheritance and the application of Mendelian laws to human albinos.] Virchows Arch. Pathol. Anat. u. Physiol. 228: 483-509. 1920.

7781. SHULL, GEORGE H. Estimating the number of genetic factors concerned in blending inheritance. Amer. Nat. 55: 556-564. 2 fig. 1921.

7782. SHULL, GEO. H. The third linkage group in *Oenothera*. Proc. Nat. Acad. Sci. 11: 715-718. 1925.—The discovery of a new mutation called *supplena* is reported, which is characterized by the presence of supernumerary petals and modified stigma. The mutated factor is closely linked with the factor for *veltaurea*, or old gold, which is independent of linkage groups I and II. This makes the 2nd factor known to belong to the 3rd linkage group.—Ralph E. Cleland.

7783. SHUSTROV, N. M., S. G. KARPOVA, AND I. V. TIKHOMIROV. The preservation of testes for transplantation in rabbits and dogs. Jour. Path. and Bact. 28: 651-654. 1925.—Rabbit testes may be successfully transplanted after keeping for as long as five days in cold Ringer-Locke's solution.—I. W. P. (Contrib. by Absts. Bact).

7784. SIBILIA, CESARE. Nuove osservazioni statistiche sul fiore di *Anemone appennina*. [New statistical observations on the flowers of *A. appennina*.] Annali Bot. 16: 189-191. 1924.

7785. SIBILIA, CESARE. Osservazioni statistiche sul fiore di "*Anemone appennina*" L. [Statistical observations on the flowers of *A. appennina*.] Annali Bot. 15: 265-272. 2 pl. 1922.

7786. SIEMENS, HERMANN WERNER. Ueber Einen, in der menschlichen Pathologie noch nicht beobachteten Vererbungsmodus: dominant-geschlechtsgebundene Vererbung. [Hitherto unknown mode of inheritance in human pathology: dominant sex-linked inheritance.] Arch. Rass.- u. Ges. Biol. 17: 47-61. 4 fig. 1925.

7787. SIEMENS, H. W. Über die Vererbungspathologie der Haut. [Genetical pathology of the skin.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 266-267. 1922.

7788. SIEMENS, HERMANN WERNER, UND EUGEN KOHN. Studien über Vererbung von Hautkrankheiten. IX. [Studies on the inheritance of skin-defects. IX.] Zeitschr. Indukt. Abstamm.- u. Vererb. 38: 1-52. 1925.

7789. SIERP. Die Bedeutung der modernen Bestrebungen der Pflanzen-physiologie für die Pflanzenzüchtung. [The significance of the modern tendencies in plant physiology for plant breeding.] Beitr. zur. Pflanzenzücht 7: 22-32. 1924.—The author stresses the possibilities of quantitative physiological studies as aids in the solution of plant breeding problems.—A. J. Mangelsdorf.

7790. SIERP, H. Die Nichtvererbungswissenschaftlichen Arbeiten von Correns. [The non-genetic studies of Correns.] Naturwissensch. 12: 772-778. 1924.

7791. SIRKS, M. J. The inheritance of seed-weight in the garden bean. Genetica 7: 119-169. 8 fig. 1925.

7792. SKUDERVA, A. W. Sugar beet breeding in the Arkansas Valley of Colorado. Jour. Amer. Soc. Agron. 17: 631-634. 1925.—Great variations in the sugar content of the beet can be had when a certain type of beet foliage is selected, irrespective of soil conditions. The flat foliage type with a long petiole, medium smooth leaf, distinct venation, red color in lower part of petiole, small crown, 5 whorls of leaves and edge of leaf smooth and regular, is perhaps the best. The foliage is onion-green to olive-green in color.—F. M. Schertz.

7793. SMIRNOV, EUGEN. The theory of type and the natural system. Zeitschr. Indukt. Abstamm.- u. Vererb. 37: 28-66. 1 fig. 1925.

7794. SMITH, KIRSTINE. Remarks on the method of calculation proposed by Mr. H. L. Trachtenberg for diallel crossings. Jour. Genetics 11: 299-300. 1921.

7795. SMITH, L. H., AND A. M. BRUNSON. An experiment in selecting corn for yield by the method of the ear-row breeding plot. Illinois Agric. Exp. Sta. Bull. 271. 567-583. 1925.—The authors summarize the results of 10 years' selection for increased and decreased yield in maize by the ear-row breeding plot in comparison with a control stock maintained by mass selection. There was a pronounced divergence between the yields of the high and low series but the high series only slightly exceeded the control stock in yield, from which the authors conclude that the divergence between the high and low series was due to a decrease in the yielding capacity of the latter. The authors conclude that continuous selection by means of the

ear-row breeding plot can not be recommended as a means of increasing yield but that continuous mass selection will maintain the yield.—*J. H. Kempton.*

7796. SNOW, R. Germination tests with pollen of stocks. *Jour. Genetics* 15: 237-243. 1925.—Because, as Saunders has shown, double throwing stocks are heterozygous for singleness although the pollen only transmits the factor for doubleness, an attempt was made to test whether a cream double-throwing race differed from a pure single cream race in pollen germination. If the singleness-bearing pollen failed to function one might expect 50% of germination in a double-throwing; 100% in a pure single race. On 1% agar + 15% sucrose in conductivity water with a little peptone, the former gave a mean of 5.5% germination; the latter, 8.4%. On stigmas the mean germination for the double-throwing race was 16.7%; for pure single, 31.1%. Both results indicate better average germination for pure single races than for double-throwers. However, a single uncontrolled test from pollen of a double throwing plant gave 34% germination.—*Margaret M. Lesley.*

7797. SNYDER, L. H., AND W. J. CROZIER. Selective pairing in gammarids. *Proc. Soc. Exp. Biol. Med.* 19: 327-329. 2 fig. 1922.

7798. SPINDLER, ERNST ADOLF. Über die Häufigkeit von Verwandtenehen in drei württembergischen Dörfern. [The frequency of consanguineous marriages in three villages of Württemberg. *Arch. Rass.-u. Ges.-Biol.* 14: 9-12. 1922.

7799. SPLECHTNER, F. Einleitung und systematische stellung der Kollektivspezies. [Introduction and systematic position of collective species.] *Zeitschr. Pflanzenzücht.* 10: 69-127. 6 fig. 1925.

7800. SPLECHTNER, F. Über die Variabilität einiger Populationen und vegetativer Linien von *Agrostis stolonifera* L. [Variability in populations and vegetative lines of *A. stolonifera*.] *Zeitschr. Pflanzenzücht.* 10: 69-128. 6 fig. 1925.

7801. SPRAGG, FRANK A. Rye breeding through self-fertilization. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 84-85. 1 fig. 1922.—In increasing and improving Rosen rye, different methods were used to get self-pollinated heads, free from cross pollination. Isolated plants in the midst of wheat fields were successful when they were surrounded by cheese-cloth supported by four 6-foot stakes driven around each plant. Later, success was obtained by hooding the heads with very light paraffined paper envelopes.—*Ernst A. Bessey.*

7802. STÁDNÍK, JAROSLAV. L'hérédité des caractères spécifiques de distinction chez *Pisum*. [Specific hereditary characters distinguishable in *Pisum*.] *Sbornik Vyzkumných Ústavů Zemědělských, Cis.* 15. Prague, 1925.—A table is given of the specific heritable characters of *Pisum* together with important morphological characters by which the different varieties can be easily distinguished. Flower color was found to be determined by 1 independent factor; pod form, by 1 factor and 8 modifying factors; shape of the pod apex, by 3 factors; seed surface, by 3 factors; seed shape (globular or laterally compressed), by 3 factors; and seed color, by 4 factors. The factors are: *F*, red flower, with *B* and *Z* purple striping of seed coat; *O*, straight pod; *T*₁, *T*₂, . . . *T*_n, curved pod (these repressive factors vary for each line so that the *F*₂ ratio of straight to curved is not the same in all the hybrids); *K*, form at straight end of pod; *C* and *S*, form at curved end of pod; *H*, smooth surface; *L* and *M*, rough surface; *d*, globular seed form; *D* + *A* + *E*, imperfectly globular; *B*, color in seed coat; *Z*, green seed coat; *R*, rust colored striping (maple) of seed coat. The number of possible combinations between the curved and straight factors in the *F*₂ generation can be determined by the formula $3^n : ((4^{n-1} - 3^{n-1}) 4 + 3^{n-1})$, (*n* being the number of repressive factors).—*From author's abstract (transl. by Mary Ellen Peck).*

7803. STANFORD, E. E. Possibilities of hybridism as a cause of variation in *Polygonum*. *Rhodora* 27: 81-99. 1925.—An abstract of previous publications on hybridism in *Polygonum* is given. Study of the material of *P. hydropiperoides*, *P. natans*, and *P. coccineum* in the Gray Herbarium indicated the possibility of hybridization, and an examination was made of the pollen of these species and of *P. hydropiperoides* × *robustius* Fernald. The last shows only 5-10% of apparently good pollen and entirely undeveloped ovaries. A similar type of defective pollen is found in many specimens of *P. hydropiperoides*, usually associated with other "off-type" features. The question is complicated in *P. natans* and *P. coccineum* by the dimorphism of the flowers. Where their ranges coincide these species usually show a large percent-

age of defective pollen, and hybridism between them is considered not unlikely. A new name is *Polygonum natans* f. *hartwrightii* (Gray) Stanford.—*S. F. Blake*.

7804. STAPLEDON, R. G. Plant breeding work at Aberyswyth. Jour. Ministry Agric. Great Britain 27: 739-748. 1920.—(See also Bot. Absts. 8, Entry 1942.)

7805. STAPLEDON, R. G. "The value of selection work in the improvement of crop plants. Selection work on herbage plants. Rept. Imp. Bot. Conference. London 1924: 73-84. Univ. Press: Cambridge, England, 1924.

7806. STAUDTE, O. Erfahrungen bei künstlichen Kartoffel Kreuzungen. [Experiences with artificial crossing of potatoes.] Illus. Landw. Zeitg. 44: 235-236. 1 fig. 1924.

7807. STRASSEN, O. ZUR. Die Bedeutung der Zweigeschlechtigkeit. [The significance of bisexuality.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 258-259. 1922.

7808. STRAUSS, MAURICE B. Fertility and toleration of temperature in inbred *Drosophila*. Amer. Nat. 59: 379-384. 1925.—Three lines of *Drosophila* derived from a single wild pair were inbred in pairs for 15-30 generations. The 3 lines showed clear differences in fertility as measured by number of offspring and number of eggs laid. Although the parent stock would breed indefinitely at 29.5°C., all the inbred lines failed to develop at that temperature. Crossing of the lines among themselves resulted in greater fertility in the 2nd generation and in 2 cases in the regaining of the ability to breed at the high temperature.—*H. H. Plough*.

7809. STROMAN, G. N., AND C. H. MAHONEY. Heritable chlorophyll deficiencies in seedling cotton. Texas Agric. Exp. Sta. Bull. 333. 3-22. 3 fig. 1925.—Two types of chlorophyll deficiency are recorded, one characterized by complete disappearance of green pigment in the cotyledons followed by early death of the seedlings; the other by an irregular distribution of white, yellow or light green and of dark green areas on the cotyledons. No plants showing the 2nd type developed to maturity but this may have been due to unfavorable environment. For the 1st (all yellow) type (from data yielded by F_2 and F_3 populations of Sea Island \times Upland and Egyptian \times Upland) it is concluded that "the presence of 2 recessive genetic factors, Y_2 and y_1 is shown to be necessary for the expression of this character." For the 2nd (pattern) type, "1, 2 and possibly 3 different genetic factors (3:1, 9:7 and 27:37 ratios) were found present in different and in the same families. Also there is a slight possibility that 2 of these factors are linked."—*T. H. Kearney*.

7810. STURTEVANT, A. H. The effects of unequal crossing-over at the bar locus in *Drosophila*. Amer. Nat. 59: 117-146. 1 pl., 10 fig. 1925.—The bar eye character in *Drosophila* has been shown to revert to normal by May, and this process has been extensively studied by Zeleny. The latter showed also that bar stocks give rise to a still more extreme form of bar ("ultra-bar") which the author here prefers to call "double-bar." Sturtevant and Morgan showed that double-bar also reverts to normal round eye, and that reversions of both types always occurred along with a cross-over in this region of the chromosome. The present study goes on from this point with an account of a new mutation in the bar locus, called "infrabar," which produces a less extreme bar condition, allelomorphous to bar. Infrabar reverts to normal and also gives the extreme form, double infrabar. It is also possible to combine it with ordinary bar through unequal crossing-over, each maintaining its identity. By facet counts each of the following can be distinguished: round, infrabar, bar, double-infrabar, bar-infrabar, double bar. It is shown that all of the changes at the bar locus—except the appearance of infrabar—occur in eggs that undergo crossing-over close to this region. The peculiar recurrent mutations of the bar series can be explained in general by the supposition that the cross-overs are unequal, so that 1 daughter chromosome gets 2 representations of the bar locus while the other receives none. Such mutations are thus in the nature of section mutations and not gene mutations. The peculiar fact is brought out that apparently 2 genes lying in the same chromosome are more effective on development than the same 2 in opposite chromosomes.—*H. H. Plough*.

7811. SUMMERS, F. Selection experiments with rice under irrigation in Ceylon. Trop. Agric. Ceylon 56: 165-174. 1 pl. 1921.

7812. SUMNER, FRANCIS B. Heredity, environment, and responsibility. Bull. Scripps Inst. Biol. Res. 10. 1-12 p. 1921.

7813. SUMNER, F. B., AND R. R. HUESTIS. Bilateral asymmetry in its relation to certain problems of genetics. Genetics 6: 445-485. 5 fig. 1921.

7814. SUNDERMANN, F. Eine interessante Form von *Campanula thyrsoidea* L. [An interesting form of *C. thyrsoidea* L.] Allg. Bot. Zeitschr. 26/27: 23-24. 1925.

7815. SUNER, AUGUST PI. La Constitution de l'individualité. [Constitution and individuality.] Scientia 29: 443-452. 1921.

7816. SWINGLE, W. W. Sex differentiation in the bullfrog. (*Rana catesbeiana*.) Amer. Nat. 59: 154-176. 36 fig. 1925.

7817. SYLVÉN, NILS. Einige Spaltungszahlen bei Kreuzungen zwischen blau- und weissblühenden Varietäten von *Linum usitatissimum*. [Segregation in crosses between blue and white flowered varieties of *L. usitatissimum*.] Hereditas 7: 75-101. 4 fig. 1925.

7818. SYLVÉN, NILS. Om själv- och korsbefruktning hos rapsen. [Self- and cross-fertilization of rape.] Sveriges Utsädesför. Tidskr. 30: 225-244. 11 fig. 1920.

7819. SYLVÉN, NILS. Swedish flax improvement. Sveriges Utsädesför. Tidskr. 31: 57-69. 7 fig. 1921.

7820. SZYMKIEWICZ, DEZYDERY. Recherches biométriques sur les Composées. [Biometric studies on the Compositae.] Acta Soc. Bot. Poloniae 1: 168-184. 1923 [1924].

7821. [TABENTSKI, A. A.] Табенцкий, А. А. Микроскопический анализ мязги. [Microscopical analysis of pulp.] Бюл. Сорт.-Сем. Управ. Сахаротреста. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 162-182. 1 pl. 1924.—To get comparable data in experiments with the pulp of sugar beets the author recommends that the pulp be examined under the microscope and the size of particles measured.—*M. Demerec*.

7822. TAMMES, TINE. Genetic analysis, schemes of cooperation and multiple allelomorphs of *Linum usitatissimum*. Jour. Genetics 12: 19-46. 22 fig. 1922.

7823. TANAKA, YOSHIMARO. A new sex-linked mutation in the silkworm, *Bombyx mori* L. Jour. Dept. Agr., Kyushu Imper. Univ. 1: 135-150. 1924.

7824. TÄNZER, ERNST, UND WALTER SPÖTTEL. Das Zackelschaf unter besonderer Berücksichtigung der Zuchten des landwirtschaftlichen Instituts der Universität Halle. [The twisted-horn sheep, with special reference to the breeding at the Agricultural Institution of the University of Halle.] Zeitschr. Indukt. Abstamm.- u. Vererb. 28: 89-206. 34 fig. 1922.

7825. TAVČAR, ALOIS. Die Vererbung der Samendimensionen von *Phaseolus vulgaris* L. [Inheritance of seed dimension of *P. vulgaris*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 40: 83-107. 1925.

7826. TEDIN, OLOF. Vererbung, Variation und Systematik in der Gattung *Camelina*. [Heredity, variation and systematics of the genus *Camelina*.] Hereditas 6: 275-385. 25 fig. 1925.

7827. TEDIN, HANS, AND OLOF TEDIN. Contributions to the genetics of *Pisum*. IV. Leaf axil colour and grey spotting on the leaves. Hereditas 7: 102-108. 2 fig. 1925.—From an old pedigree line of peas having a single leaf axil ring and grey spotting on the leaves, 2 new forms have arisen, both with a double ring and without grey spotting. Crossing experiments with these lines show 3 factors segregating as multiple allelomorphs, involved in the inheritance of the leaf axil ring: D^w , double leaf axil ring; D , single leaf axil ring; and d , ringless. D^w is dominant to D and d , and D is dominant to d . The expression of both double and single ring is dependent upon the presence of the factor A , red flower color. The normal grey spotting on the leaves caused by a thin air layer between the epidermis and palisade cells is represented by the factor F_e . Crosses between normal and non-spotted lines gave an F_2 ratio of 3 normal: 1 without spotting. F_e is linked with P_e , the factor for black hilum, with 5% of crossing over. The factor symbols— A_r , rose flower color and B , purple flower color—are adopted to replace B and C , formerly used by the authors.—*Mary Ellen Peck*.

7828. TEICHMANN, E. Befruchtung und Vererbung. [Fertilization and heredity.] 3rd ed., 112 p., 13 fig. B. G. Teubner: Leipzig and Berlin, 1919.

7829. TERROINE, E. F., ET H. BARTHÉLÉMY. De l'existence de rapports biométriques entre la grenouille rousse (*Rana fusca*) et ses oeufs à l'époque de la ponte. [Existence of biometric correlation between *Rana fusca* and its eggs at the time of their deposition.] Compt. Rend. Acad. Sci. [Paris] 173: 740-742. 1921.

7830. THADANI, K. I. Inheritance of certain characters in *Gossypium*. Agric. Jour. India 20: 37-42. 1924.—The mode of inheritance of seed fuzziness, amount of lint on seed and the length of lint in American Upland, Hindi, Egyptian, and Sea Island cotton, are described

and data reported. In studying the inheritance of seed fuzziness, naked seed, typical of Hindi weed cotton; partially-fuzzy seed, typical of Egyptian and Sea Island cotton; and entirely-fuzzy seed, typical of American Upland cotton, were used. In the cross, naked seed \times entirely-fuzzy seed, the former was dominant in the F_1 ; while in the F_2 generation, segregation gave a ratio of 3.01 naked to 0.99 entirely-fuzzy, indicating that the character is determined by a single pair of factors. This hypothesis was verified by the F_3 generation. Three grades of density of fuzz were observed among the seed classed as entirely fuzzy, namely woolly, felted, and scanty-fuzzy. In the cross, felted \times woolly, felted seed was dominant in the F_1 ; while in the cross scanty-fuzzy \times woolly, scanty-fuzzy was dominant in the F_1 . When partially-fuzzy seed were crossed with entirely-fuzzy seed (Acala), 20 F_2 plants were produced. Nineteen of these plants bore seed entirely-fuzzy, but 1 bore partially-fuzzy seed. The F_2 population did not fall into distinct classes owing to the diversity of types present. Several factors are involved, apparently, in these crosses between partially-fuzzy and entirely-fuzzy seed. Lone Star, Texas Rust, Red Leaf, and Acala cottons having ginning percentages of 26-36, were each crossed with a strain of "No-Lint," which has a ginning percentage of 0-10. In these crosses high percentage of lint was dominant in the F_1 . In the F_2 generation, segregation gave a ratio of 2.98 high percentage of lint to 1.02 low percentage, indicating that a single pair of factors determine the character. This hypothesis was verified by the F_3 generation. In the cross, long lint ($1\frac{1}{4}$ " \times short lint ($\frac{3}{8}$ "), the former was dominant in the F_1 . No figures are given on the F_2 population.—*D. T. Killough.*

7831. THOMPSON, W. P. Earliness in wheat and its inheritance. *Sci. Agric.* 1: 193-199. 1921.

7832. THOMPSON, W. P. The correlation of characters in hybrids of *Triticum durum* and *Triticum vulgare*. *Genetics* 10: 285-304. 1925.—Thirteen pairs of characters which distinguish *T. durum* from *T. vulgare* were studied in F_2 and F_3 . The F_2 fall into 3 groups: (1) with *durum* characters only or chiefly, (2) with *vulgare* characters only or chiefly, (3) with a considerable number of intermediate characters and approximately equal numbers of *durum* and *vulgare* characters. Those in (1) and (2) were far more numerous than expected on a Mendelian basis but less numerous than has been reported for F_3 . Group (3) showed a high degree of sterility and produced a high proportion of *durum* and *vulgare* types in F_3 . The correlation of *durum* characters on the one hand and *vulgare* ones on the other is by no means complete. Chromosome numbers and their relation to the 13 characters is recorded for F_2 . A much larger proportion showed chromosome numbers intermediate between those of the parents (14 and 21) than is recorded for F_3 . The 14-chromosome segregates were of the *durum* type and the 21-chromosome segregates were of the *vulgare* type, but many plants of each type showed 1 or few features of the other, even the most characteristic ones. Evidence is brought forward which is considered to indicate that the correlation of characters and partial sterility depends in part at least on chromosome incompatibilities and not entirely on elimination, due to unbalance of gametes with intermediate chromosome numbers. Results are given concerning the inheritance of rust-resistance in this cross. The ratio of susceptible to resistant segregates is about 13:1. Nearly all the resistant plants were *durum*-like though many showed 1 or few *vulgare* characters. The few *vulgare*-like resistant plants were not so resistant as the *durum* parent. Since resistance depends on more than 1 factor it will be very difficult to get the full *durum* resistance in *vulgare* types without other *durum* characters.—*Author.*

7833. THOMSEN, MATHIAS. Sex determination in *Trialeurodes vaporariorum*. *Nature* 116: 428. 1925.—The American race of *Trialeurodes vaporariorum* shows arrhenotokous parthenogenesis (eggs may be fertilized giving rise to females, the unfertilized eggs developing into haploid males). The English race shows thelytokous parthenogenesis. Oögenesis is very similar in both. The reduced number of chromosomes ($N = 11$) is seen during maturation and 2 polar nuclei are produced; but in the thelytokous race the chromosomes divide later so that somatic cells contain 22 chromosomes. In *Aleuroides proletella* there is only 1 maturation division in the spermatogenesis of haploid males. This is a preliminary report.—*Margaret M. Lesley.*

7834. TIPPETT, L. H. C. On the extreme individuals and the range of samples taken from a normal population. *Biometrika* 17: 364-387. 1925.—Derivation of constants for

distribution of extreme individuals and range in samples. This method may be used as a criterion for rejection of outlying observations, and for determining standard deviation from range.—*J. R. Miner.*

7835. TITSCHACK, ERICH. Die sekundären Geschlechtsmerkmale von *Gasterosteus aculeatus* L. [The secondary sex characters of *G. aculeatus* L.] *Zool. Jahrb.* 39: 83-148. 1 pl., 25 fig. 1922.

7836. TJEBBES, KLAAS. Die Zeichnung der Samenschale von *Phaseolus multiflorus*. [Seed coat pattern in *P. multiflorus*.] *Hereditas* 7: 129-144. 7 fig. 1925.

7837. TJEBBES, K., EN H. N. KOOIMAN. Erfelijkheidsonderzoekingen bij boonen. IV. Over den strepingsfactor, een geval val volkomen afstooting tusschen twee factoren. [Genetical studies on beans IV. On the striping factor, a case of complete repulsion between two factors.] *Genetica* 3: 28-34. 1921.

7838. TJEBBES, K., EN H. N. KOOIMAN. Erfelijkheidsonderzoekingen bij boonen. V. Analyse eener spontane kruising van de stokkievitsboon. [Genetical studies on beans. V. Analysis of a spontaneous bean cross.] *Genetica* 3: 34-40. 1921.

7839. TJEBBES, K., EN H. N. KOOIMAN. Erfelijkheidsonderzoekingen bij boonen. [Genetic studies in beans. VI.] *Genetica* 4: 62-63. 1922.

7840. TORNAU. Die Anwendung der Mendelschen Regeln in der Praxis der landwirtschaftlichen Pflanzenzüchtung. [Application of Mendel's law to agricultural plant breeding.] *Illus. Landw. Zeitg.* 41: 249-250, 258-259. 1921.

7841. TORSTENSSON, G. Zellsaftreaktion und Immunitätsforschung. [Cellsap reaction and immunity investigation.] *Zeitschr. Pflanzenzücht.* 10: 167-173. 1925.

7842. TROTET, E. Contribution à l'étude des causes déterminantes lors de la formation des sexes. [Contribution to the study of sex determination.] (Inaug. Thesis., Univ. Bern.) 40 p. Aubonne, 1922.

7843. TSCHERMAK, A. VON. Über den Einfluss von Bastardierung auf die Entfaltungstärke gewisser Erbanlagen. [Influence of hybridization on the intensity of expression of certain genes.] *Sonderabdr. Tierärztl. Arch. Sudetenländer* 1: 4-8. 1921.

7844. TSCHERMAK, ARNIM VON. Über die Erhaltung der Arten. [Maintenance of species.] *Biol. Zentralbl.* 41: 304-329. 10 fig. 1921.

7845. TSCHERMAK, E. Gesellschaft für Pflanzenzüchtung Wien (Z). [Society for plant breeding. Vienna (Z).] *Zeitschr. Pflanzenzücht.* 8: 188-191. 1921.

7846. TSCHERMAK, E. The perfection of the technique of hybridization of the four principal grains. *Zeitschr. Pflanzenzücht.* 8: 1-13. 7 fig. 1921.

7847. TSCHERMAK, E. Über die Vererbung des Samengewichtes bei Bastardierung verschiedener Rassen von *Phaseolus vulgaris*. [Inheritance of seed weight hybridizations of different races of *P. vulgaris*.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 28: 23-52. 122.

7848. TSCHERNING, RÜDIGER. Muskeldystrophie und Dementia praecox. Ein Beitrag zur Erblichkeitsforschung. [Muscular dystrophy and dementia praecox. A contribution to the investigation of heredity.] *Zeitschr. Ges. Neurol. u. Psychiatr.* 69: 169-181. 1921.

7849. TSCHIRCH, A. Die Aufspaltung des Rheum tanguticum. [The splitting of *R. tanguticum*.] *Schweiz. Apoth. Zeitg.* 62: (3-5). 1924.—The author describes the 5 forms he has succeeded in separating from his *R. tanguticum* which he grew from seed collected by Tafel in Tibet: (1) white blossoms, deeply divided leaves; (2) pink blossoms, deeply divided leaves; (3) deep red blossoms, deeply divided leaves; (4) white blossoms, undivided leaves; (5) rose-colored blossoms, undivided leaves.—*Charles C. Plitt.*

7850. TUKEY, H. B. The rôle of the European grape (*Vitis vinifera*) in the origination of American varieties. *Proc. Amer. Soc. Hort. Sci.* 1921: 30-36. 1921.

7851. TURESSON, GÖTE. The plant species in relation to habitat and climate. Contributions to the knowledge of genecological units. *Hereditas* 6: 147-236. 50 fig. 1925.

7852. UBISCH, G. VON. Abweichungen vom mechanischen Geschlechtsverhältnis bei *Melandrium diocum*. [Deviations from mechanical sex ratios in *M. diocum*.] *Biol. Zentralbl.* 42: 112-118. 1922.

7853. UBISCH, G. VON. III. Beitrag zu einer Faktorenanalyse von Gerste. [Third contribution to a factorial analysis of barley.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 25: 198-210. 4 fig. 1921.

7854. UBISCH, G. VON. Genetisch-physiologische analyse der heterostylie. [Genetical-physiological analysis of heterostyly.] *Bibliographia Genetica* 2: 287-342. *Illus.* 1925.—A critical review and discussion of the literature on heterostyly is given: (1) Historical survey, (2) genetics of heterostyly, (3) fertility relationships. A comprehensive bibliography of 81 references is appended.—*A. J. Mangelsdorf.*

7855. UBISCH, G. VON. Versuche über Vererbung und Fertilität bei Heterostylie und Blütenfüllung. [Experiments in inheritance and fertility in heterostyly and doubleness.] *Zeitschr. Bot.* 15: 194-232. 5 fig. 1923.—A subheterostylous race of *Primula malocoides* was found, which behaves as a recessive to the normal long- and short-styled forms. The normal long is *aaBB*; the normal short, *AaBB*; and the subheterostylous race, *aabb*. It is completely self-fertile. Individual flowers were also found in normally heterostylous races, which were phenotypically subheterostylous, and these were also completely self-fertile. The fertility of "legitimate" combinations and the sterility of "illegitimate" combinations is assumed to be due to concentration differences in anthers and pistils of different levels. A color factor, (R) was found in *Oxalis floribundi*, which caused genotypically long-styled and mid-styled plants to appear as short-styled. The fertility behavior of these plants was in accordance with their phenotype. This is taken as further proof that the fertility relationships depend on the relative length of the anthers and pistils. Doubleness in *Petunia* is due to the interaction of 2 dominant factors. Singles lack either or both factors. The deficiency of doubles in the ratios is due to their lower viability and later blooming. The assumption of sex-limited inheritance to explain the results obtained by Saunders is considered disproved by the fact that reciprocal crosses give identical results. The inheritance of doubleness in *Petunia* appears to have a different basis from that in *Matthiola*.—*A. J. Mangelsdorf.*

7856. UNITE, JUAN O. A study of the asexual inheritance of stooling habit of sugar cane seedlings. *Philippine Agriculture* 14: 329-345. 1 pl. 1925.—Working with 1406 seedlings for a period of 20 months the author found that the stooling habit of the sexual seedlings was not inherited at all by their 1st asexual off-spring; hence he concludes that the stooling power of mature seedlings can not be taken as a guide in selection of seedlings for subsequent vegetative propagation.—*H. P. Agee.*

7857. VANDENDRIES, R. Nouvelles recherches sur la sexualité des Basidiomycètes. [New research on the sexuality of the Basidiomycetes.] *Bull. Soc. Roy. Bot. Belgique* 2^e Ser. 56: 73-97. 2 fig. 1924.

7858. VAN TUBERGEN, C. G. Sterility in freesias. *Gard. Chron.* [London] 70: 150. 1921.

7859. [VAVILOV, N. I.] Вавилов, Н. И. Очередные задачи сельскохозяйственного растениеводства. [The present problems of plant industry.] (English summary.) *Труды Прикл. Бот. Селекции.* [Bull. Appl. Bot. and Plantbreed.] 14⁵: 1-17. 1924-1925 [1925].—According to the author the principal problems in the field of plant industry in Russia are as follows: Investigation of varieties of plants cultivated in Russia; organization of a varietal census for all cultivated crops; determination of the limits within which the varieties are grown and organization by the government of a systematic testing of the varieties of practical value; investigation of all existing cultivated plants, as far as possible on a world scale; investigation of the wild flora with a view toward utilization of species, and synthesis of new forms by hybridization.—*M. Demerec.*

7860. VENKATRAMAN, T. S. Sugarcane breeding in India—Hybridization to testing. *Agric. Jour. India* 20: 173-186. 1925.

7861. VEREET, J. A. Bud selection. A preliminary report on results and methods. *Hawaiian Planters' Record* 27: 271-282. *Illus.* 1923.—By conducting a small progeny test with sugar cane the author found a strain consistently superior to the others, and another consistently inferior to any other. He suggests a similar progeny test for all the plantations.—*H. P. Agee.*

7862. VERSCHUER, OTMAR V. Die Wirkung der Umwelt auf die anthropologischen Merkmale nach Untersuchungen an eineiigen Zwillingen. [Action of environment on anthropological characters according to investigations of monozygotic twins.] *Arch. Rass.- u. Ges. Biol.* 17: 149-164. 1925.—The paper gives photographs of 27 pairs and averages of differences in various measurements between members of 42 pairs of supposedly identical twins. Differ-

ences are expressed in percentages of the absolute measurements. The average deviations of the individual twin-differences from the average twin-differences are also given (but not the individual differences themselves). Both sizes and proportions of parts (ratios of sizes) are thus treated. It was found that body weight showed by far the highest average percentage difference between twins of a pair; rather large differences also appeared in depth of chest, hip breadth, abdomen, waist and neck dimensions, breadth of hand, most cranial measurements and indices, facial height-breadth ratio, and hip-shoulder breadth ratio. Moderate differences appeared in lengths of most limb-segments, head-body height ratio, breadths of shoulder, mouth and nose, head circumference and height (position) of ear; small differences in total body-height, arm-length, chest-breadth, nose height, ear length and breadth, facial height; very small differences in breadth between outer corners of eyes and in the following ratios: jaw to cheek-bone breadth, nose height to breadth, ear length to breadth, arm to leg length, and leg, arm, trunk or neck to total body length. There was little or no tendency for head length, breadth and height or for face breadth and height to vary in the same direction, and head plus neck height showed, if anything, a reciprocal relation to trunk length. Cases of varying degrees of sagittal compression of head ("hypsikephaly") of 1 member of a pair were found, said probably to be caused by intra-uterine crowding. Greater differences (not unquestionably significant) were on the average found between twins that had had more different environments, but older twins (16-64 years) agree about as much as younger twins (3-16). Females agreed about as much as males. There was some slight evidence for correlation between birth-weight differences and extent of later differences. Some differences in mental traits were referred to.—*H. J. Muller.*

7863. VICARI, E. M. The non-inheritance of the effects of training. *Science* 59: 303. 1924.—Mice, produced by "inbreeding" after the 1st generation, were trained for 4 successive generations in a simple maze, at the same age. Numbers of mice in successive generations were 62, 113, 58, and 14, respectively, and each mouse was given a trial on 12 successive days. Reaction time and number of wrong turns were recorded for each trial of each individual. Average reaction time, and amount of error, showed no consistent change from generation to generation and gave no evidence for inheritance of effects of training.—*H. J. Muller.*

7864. VINCI, FELICE. Sui coefficienti di variabilità. [The coefficient of variability.] *Metron* 1: 62-74. 1920.

7865. [ВОЙШКЕВИЧ, И. И.] Войшкевич, И. И. Применение вариационных кривых при селекции сах. свеклы. [Application of variation curves in the selection of sugar beets.] Бюл. Сорт.-Сем. Управ. Сахаротрета. [Bull. Plantbreed. Sect. Sugartrust, Kiev] 8: 120-147. 1924.—The author recommends a more extensive use of curves in analyses of data obtained in various stages of breeding work. Numerous examples given by the author show the way the curves can be constructed.—*M. Demerec.*

7866. VOKOLEK, HEINRICH. Über Riesenwuchs bei einigen Formen der Gattung *Primula*. [Gigantism in some forms of *Primula*.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 40: 42-82. 5 pl. 1925.

7867. VOSS. Bastardierung von *Cygnopsis cygnoides* var. dom. mit *Cygnus olor*. [Hybridization of *C. cygnoides* var. dom. with *C. olor*.] *Verhandl. Deutsch. Zool. Ges. E. V.* 1921: 79-80. 1921.

7868. VRIES, HUGO DE. Brittle races of *Oenothera Lamarckiana*. *Bot. Gaz.* 80: 262-275. 1925.

7869. VRIES, HUGO DE. Die latente Mutabilität von *Oenothera biennis* L. [Latent mutability of *Oenothera biennis*.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 38: 141-199. 13 fig. 1925.—By a twice repeated crossing of *Oenothera biennis* *gigas* with *O. biennis*, it is possible to call forth a large number of mutant forms which correspond in their striking characters very closely to the mutant forms of *O. lamarckiana* already known. They can be called by the same names—*lata*, *scintillans* *cana*, *liquida*, *pallescens*—in addition to numerous secondary forms such as *militaris*. All of these, however, bear unmistakably at the same time the *biennis* stamp. The author takes the opportunity to review his own and other workers' concepts of the nature of mutations, and the relationship of *biennis* to *Lamarckiana*. He distinguishes between premutations and external mutations, the former including the changes

in the germ-plasm, the latter the external manifestation of these. Premutations occur mostly at definite periods in the history of a species, but may not be expressed until long after they occur, owing to the presence of concealing factors. At intervals, however, they may escape from these factors, and make their appearance. The constant reappearance of the same mutants points, therefore, to a condition of latent mutability. The author believes that *biennis* has been derived from *Lamarckiana*, and that a premutation period occurred before this differentiation took place, so that both species have inherited in general the same set of latent mutations. This is indicated by the presence of parallel mutations in *biennis* and *Lamarckiana*. Parallel mutations in the 2 species include not only most of the primary "semi-dominant" mutations, but also some of the homozygotic mutations, which have their complements in the so-called "central chromosome."—*Ralph E. Cleland*.

7870. VRIES, HUGO DE. **Mutant races derived from *Oenothera Lamarckiana semigigas*.** *Genetics* 10: 211-222. 1925.—The offspring of *O. lamarckiana semigigas* include the same forms that occur in the progeny of *O. lamarckiana*. The various dimorphic mutants are present (*scintillans*, *cana*, *liquida*, *spathulata* and *pulla*), and, when fertilized with pollen of a *velutina* type, split into *lamarckiana* and their own type. Sesquiple forms are also present (*oblonga*, *auricula* and a new form, *cana sesquiple*), and give a uniform progeny, besides about $\frac{1}{2}$ empty seed. Fourteen-chromosome forms also yield a uniform offspring. Sixteen- and 17-chromosome types remain constant for the most part. Mutants derived from *O. lamarckiana semigigas* are therefore constituted, as far as investigated, exactly like corresponding mutant races sprung directly from the parent species.—*Ralph E. Cleland*.

7871. VRIES, HUGO DE. **Mutationen und Prämutationen.** [Mutations and premutations.] *Naturwissenschaften* 12: 253-260. 1924.—This paper gives a discussion with numerous examples of the idioplasmic (premutations) and the actual outer changes (mutations) as a result of such inner changes.—*Orton L. Clark*.

7872. WAALER, GEORGE H. M. **The location of a new second chromosome eye colour gene in *Drosophila melanogaster*.** *Hereditas* 2: 391-394. 1921.—A new eye color mutation in *Drosophila*, called brown, is described. It is located in the 2nd chromosome, 3.8 units to the right of plexus, and has a locus of 102.1. It is an excellent character, intensifying with the age of the fly.—*H. H. Plough*.

7873. WAARDENBURG, P. J. **Over het erfelijkheidsmoment bij de aangeboren verplaatsing van de pupil en van de lens.** [Hereditary influences in congenital dislocation of the pupil and of the lens.] *Genetica* 6: 337-382. 14 fig. 1924.—The author gives a pedigree in which 15 persons in 4 generations possessed the character, bilateral. This ectopia behaves as a dominant, without sex correlation. The direction of the ectopia is the same with all members of the family—upward-inward. It manifested itself in different gradations. The character was independent of iris color and of refraction anomalies. Most cases were correlated with narrowness of pupil, structural changes in iris, strong rests of membrana pupillaris and absence of limbus. In only 1 case was there a slight coloboma of the lens on 1 eye with pigmentation of the membrane capsulopupillaris. Coloboma of the lens was also found in a case of uncomplicated ectopia of the lens. In the author's cases there was no correlation between coloboma of the lens and absence of fibers of the zonula Zinnii or between normal lens and presence of the fibers. Pigmentation of the membrana capsulopupillaris was also found in a case of the combination of the ectopia pupillae et lentis, which probably bears a recessive character. Several cases of ectopia of the lens also bear a recessive character. The author gives an example of the connection between ectopia of the pupil and other congenital anomalies of the eye. In all cases of ectopia of the lens (and pupil) it seemed to be smaller and more bulging than the normal lens. The special importance of the mesoderm has been proved by the author in his cases of congenital anomalies. It is difficult to know whether the mesodermic tissue possesses a primary or a secondary character.—*Author*.

7874. WAGNER. **Züchterische Massnahmen zur Hebung des bayerischen Hopfenbaues.** [Breeding measures to increase Bavarian hop culture.] *Landw. Jahrb. Bayern* 1920: 1-29. 1920.

7875. WALDRON, L. R. **An alfalfa bud mutation.** *Jour. Heredity* 16: 423-424. 1925.—A violet-flowered alfalfa plant produced a mutating white-flowered branch. The plant was

known to be heterozygous for the white-flowered condition as 1 grandparent bore strictly non-pigmented flowers and produced nearly non-pigmented seed.—*Author.*

7876. WARREN, ERNEST. Spermatogenesis of spiders and the chromosome hypothesis of heredity. *Nature* 116: 395-396. 1 fig. 1925.—Spiders, especially *Polytcs natalius*, show only amitotic divisions in spermatogonial nuclei. Two types of spermatozoa are produced, usually more than 4 from each spermatocyte. The author assumes the mechanism in other forms to be the same as in spiders and therefore questions the present theories of chromosome behavior.—*Anna R. Whiting.*

7877. WARTH, GUSTAV. Zytologische, histologische und stammesgeschichtliche Fragen aus der Gattung Fuchsia. [Cytological, histological and race-historical questions concerning Fuchsia.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 38: 200-257. 1925.—*Fuchsia microphylla*, *arborescens* (?), *fulgens*, *splendens*, *serratifolia*, *boliviana*, *procumbens*, and *colensoi* have 11 pairs of chromosomes and all of them have pollen with 2 germ pores. The pollen size differs considerably in these species, the difference being somewhat proportional to the size of the chromosomes. *F. coccinea* and *lycioides* have 22, *globosa* 23-24, while *triphylla* has $\frac{23}{2}$ pairs of chromosomes. The tetraploid species were placed in the same part of section Eufuchsia by Raimanns on the basis of similarity of morphological structure. All of them have pollen with 3 germ pores while the triploid has either 2 or 3. Two garden races had 88-92 chromosomes and are thought to be octoploids. They reduced abnormally. Several species (*F. globosa*, *lycioides* (?) and *colensoi*) also showed reductional abnormalities which result in irregular microspore formation. Variability of germ pore number is associated with such irregularities. The author presents evidence to show that abnormal reduction results chiefly from hybridity and is not due to the effect of external conditions to any great extent. Germ pore number in *Fuchsia*, as in *Oenothera* and *Solanum*, is thought to be a reliable index of chromosome number. Examination of pollen from herbarium specimens in addition to the fresh material showed the extremes of pollen size to be as 1:30. Pollen from diploid and tetraploid plants compare as 1:3 rather than as 1:2 in size. An attempt is made to deduce the origin of the tetraploid forms by comparing them with diploid forms having similar pollen size and morphological characters. Descriptions of 12 (3 questionable) and photographs ($\times 1$) of 9 species are given.—*Margaret M. Lesley.*

7878. WASMANN, ERICH. Modern biology and the theory of evolution. Transl. from 3d German ed. by A. M. BUCHANAN. xxii + 539 p. B. Herder Book Co.: St. Louis, 1923.

7879. WEBER, F. Phyletische Potenz. [Phyletic potency.] *Naturwiss. Wochenschr.* 19: 673-680. 1920.

7880. WECK-ECKENDORF. Ein Beitrag zur Pflanzenzüchtbuchführung. [A contribution to plant breeding record-keeping.] *Zeitschr. Pflanzenzücht.* 10: 177-220. 1925.

7881. WEIL, ARTHUR. Die Körpermasse der Homosexuellen als Ausdrucksform ihrer spezifischen Konstitution. [Body size of homosexuals as an expression of their specific constitution.] *Arch. Entwicklungsmech. Org.* 49: 538-544. 1921.

7882. WEIMERT, BERNH. Angeborene Leseschwäche. [Congenital mental retardation.] *Diss. Leipzig* 1920. 33 p. Gustav Fock: Leipzig, 1922.

7883. WEINBERG, W. Zur Grundformel der regelmässigen Idiophorie. [The fundamental formula of regular idiophory.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 34: 140-141. 1924.

7884. WEINBERG, WILHELM. Zur Lehre vom multiplen Allelomorphismus. [Theory of multiple allelomorphism.] *Münchener Med. Wochenschr.* 68: 950. 1921.

7885. WEINBERG, W. Zur Theorie und Methodik der Vererbungsstatistik. [Theory and method in heredity statistics.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 33: 316. 1924.—A note claiming priority in regard to certain properties of Mendelian populations.—*Sewall Wright.*

7886. WEISS, F. E. On the leaf-tissues of the graft hybrids of *Crataego-Mespilus Asnersii* and *Crataego-Mespilus Dardari*. *Mem. & Proc. Manchester Lit. and Philosoph. Soc.* 69: (1-6). 1 pl. 1924-1925.—This paper discusses the views of Noll, Meyer, David and Baur on graft-hybrids, with particular reference to those mentioned in the title. These 2 forms arose at the graft union of a medlar (*Mespilus*) scion and a hawthorn (*Crataegus*) stock. The 2 forms arose as separate branches, one more nearly resembling the hawthorn, the other the

medlar. Baur regards them both as periclinal chimaeras, both forms having hawthorn cores and medlar shells, though in the Dardari form the medlar enveloping tissue is assumed to have more cell layers than the Asniersii form. Baur and Meyer both assert the leaf epidermal cells of these forms to be those of the medlar. The author found striking differences between the 2 species involved as regards the epidermal cells on the upper side of the leaf and the leaves of the graft hybrid forms. In this respect they both resembled more nearly those of the hawthorn than of the medlar.—*Orland E. White.*

7887. WEISS, PAUL. Abhängigkeit der Regeneration entwickelter Amphibienextremitäten vom Nervensystem. (Der Begriff des Gestaltungsstons.) [The dependence on the nervous system of amphibian extremities developed by regeneration.] Arch. Mikrosk. Anat. 104: 317-354. 10 fig. 1925.

7888. WEISS, PAUL. Die seitliche Regeneration der Urodelenextremität. [Lateral regeneration of Urodel extremities.] Arch. Mikrosk. Anat. 104: 395-406. 4 fig. 1925.

7889. WEISS, PAUL. Unabhängigkeit der Extremitätenregeneration vom Skelett (bei *Triton cristatus*.) [The independence from the skeleton of regenerated extremities in *Triton cristatus*.] Arch. Mikrosk. Anat. 104: 359-392. 6 fig. 1925.

7890. WELLER, [K.] Einiges über unsere Erfahrungen in der Züchtungstechnik bei Dauerfutterpflanzen. [Technical breeding of perennial forage plants.] Beiträge zur Pflanzenzücht. 7: 73-89. 1924.—Detailed instructions are given for starting perennial forage plant seedlings until they are transferred to permanent nursery beds. In the nursery, cross-fertilization is prevented by spatial or temporal separation or by tenting. Comparative selection trials must continue 4-5 years to be of value. After a desired selection is recognized, vegetative and seed propagation are used. *Dactylis glomerata* proved winter-tender, grown from New Zealand seed. *Arrhenatherum elatius* showed less variation than *D. glomerata* among lots of seed from different sources, and produced no seed when tented. Other brief agroeconomic notes on grasses are given. Several improved strains have been placed on the market.—Clover breeding work has been slower. White-flowered red clover is associated with pure yellow seed. Yield results are given, with limited trials, from some of the improved sorts in comparison with commercial lots of seed.—In comments made on the foregoing by several persons, GRIESBECK calls attention to an evident correlation of flower color and longevity in alfalfa. WELLER gives data on persistence of alfalfa strains from different countries.—*L. R. Waldron.*

7891. WERNER, P. Neue Züchtungserfolge mit *Begonia semperflorens* und *gracilis*. [New breeding results with *Begonia sempervirens* and *B. gracilis*.] Gartenwelt 26: 3-4. 1 fig. 1922.

7892. WESTENHÖFER, M. Über die Bezeichnung "Rassenhygiene" und Änderungsvorschlag. [The designation "race hygiene" and a suggestion of a change.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 269-271. 1922.

7893. WESTERMEIER, KURT. Untersuchungen über den Fruchtstand bei Umbelliferen. [Investigations of fruitfulness in Umbelliferae.] Zeitschr. Pflanzenzücht. 10: 63-67. 1924.

7894. WETTSTEIN, R. Die Verwertung der Mendelschen Spaltungsgesetze für die Deutung von Artbastarden. [Valuation of the Mendelian law of segregation for the significance of species hybrids.] Zeitschr. Indukt. Abstamm.- u. Vererb. 23: 300-306. 1920.

7895. WHITE, ORLAND E. Inheritance studies in *Pisum*. V. The inheritance of scimitar pod. Genetics 10: 197-210. 10 fig. 1925.—The inheritance of scimitar pod, designated *s*, is traced through 3 generations from crosses between 8 varieties of broad pod (*S*) peas and a single variety breeding true for scimitar. Broad pod is incompletely dominant in the *F*₁, some pods being slightly curved. The *F*₂ shows 2 classes of segregates, broad or slightly curved and scimitar pod in the ratio 3:1. The *F*₃ gives the expected results from a monohybrid *F*₂ generation.—*Mary Ellen Peck.*

7896. WHITING, P. W., AND ANNA R. WHITING. Diploid males from fertilized eggs in Hymenoptera. Science 62: 487. 1925.—Results of crosses involving hereditary character differences have shown that the majority of males inherit from the mother only and are presumably haploid, while females inherit from both parents and are diploid. In certain crosses a few almost sterile males appear, resembling their heterozygous sisters. These were believed

at 1st to be haploid mosaics or derived from sperm nuclei and therefore haploid. With occurrence of further mutations it is possible to show that these males are probably diploid, inheriting from both parents factors modifying the same structure. The cause of their sterility and that of their few daughters is unknown.—*Anna R. Whiting.*

7897. WILLIAMS, I. A. **Monoecious form of *Mercurialis perennis* L.** Jour. Bot. 63: 179-180. 1925.—Two ♀ specimens of *Mercurialis perennis*, each bearing a few ♂ flowers, were found by the author at Quell, Blackdown, Sussex, England. The article notes other discoveries of ♀ plants of *M. perennis* bearing ♂ flowers, ♂ plants bearing ♀ flowers and a form with hermaphroditic flowers.—*Mary Ellen Peck.*

7898. WILLIAMS, R. D. **Studies concerning the pollination, fertilization and breeding of red clover. Seasons 1921-1924.** [Bull.] Welsh Plant Breed. Sta. Univ. Coll. Wales, Aberystwyth Ser. H, 4. 1-58. 1925.—This contribution is divided into 3 parts: (1) Self-fertilization; (2) Natural pollination by insects; (3) Artificial cross pollination and breeding methods. Experiments made in 1921, 1922, 1923, and 1924 are recorded in which self-pollination of various strains of red clover was effected, by hand, by bees and by rubbing the heads. Results confirm conclusions reached by Fergus that while red clover is practically self-sterile there are individuals with some degree of self-fertility. Flowers self-pollinated before they are open set a higher percentage of seed than flowers pollinated after opening and this fact is interpreted in the light of Westgate and Coe's studies which showed that in self-pollination the pollen tube grows much more slowly than in the case of cross-pollination. Self-pollination of the L_1 progeny of self-fertile plants resulted in failure, only a very few seed being produced. In (2) the range of flowering period of various standard strains of red clover is recorded and the insect visitors, especially *Bombus* spp., are noted. Part (3) is devoted to a discussion of technique and the results secured by different methods. It is shown that bees caught on other flowers may carry red clover pollen and that isolation of red clover plants in a field of hairy vetch, 10 yards being left between clover plants in all directions, did not prevent crossing. When pollen was washed from bees and allowed to dry, no fertilization resulted from its use; but when used while wet after having been immersed in water for 5 minutes, some seed were set.—*A. J. Pieters.*

7899. WILSON, EDMUND B. **Protoplasmic systems and genetic continuity.** Amer. Nat. 59: 481-496. 3 fig. 1925.—Studies upon the germ cells of scorpions have shown no indications that chondriosomes have a nuclear origin; they appear to be strictly cytoplasmic structures. Evidence, not entirely conclusive, shows chondriosomes to have genetic continuity always arising from preexisting ones. During mitosis, chondriosomes are sorted out during the anaphase and telophase periods into 2 approximately equal groups. During this sorting process they certainly undergo no division or fragmentation temporally related to the mitotic process. Chondriosome increase takes place by fragmentation, variable both as to time and size of resulting constituents. It is highly probable that the longer chondriosomic rods and threads arise from terminal growth of shorter ones. While the chondriosomes in the material studied may be considered as self-perpetuating units they should not be held as strictly autonomous as they are too variable and polymorphic. Studies upon the Golgi-bodies show their morphology and ontogeny to be similar to the chondriosomes except that there is less exact evidence of their genetic continuity. It is surmised that certain of the cytoplasmic stuffs may become so individuated as to develop into definitely self-perpetuating bodies. This somewhat preformistic conception of the cytoplasm differs materially from the pangenetic and micromeristic systems of Weissmann and others.—*L. R. Waldron.*

7900. WILSON, IRA T. **Two new hereditary tumors in *Drosophila*.** Genetics 9: 343-362. 16 fig. 1924.—Two new hereditary tumors in *Drosophila* are described. They are derived from embryonic rudiments in the larvae and deposit black pigment in later stages. They behave as recessives when crossed to other strains, but the ratios indicate that they are determined by multiple factors. The growth of both tumors is influenced by both hereditary factors and by environmental conditions.—*H. H. Plough.*

7901. WINGE, Ø. **Ad R. Walthers Kritik von Johs. Schmidts Arbeiten über die Vererbung quantitativer Eigenschaften.** [Walther's critique of Schmidt's works on the inheritance of quantitative characters.] Zeitschr. Indukt. Abstamm.- u. Vererb. 26: 294-298. 1921.

7902. WINIWARTER, H. La formule chromosomiale dans l'espèce humaine. [Chromosome formula in man.] Compt. Rend. Soc. Biol. 85: 266-267. 1921.

7903. WINKLER, HANS. Über die Entstehung von genotypischer Verschiedenheit innerhalb einer reinen Linie. [Origin of genotypic differences within a pure line.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 244-245. 1922.

7904. WINKLER, HUBERT. Reiszüchtung. [Rice breeding.] Tropenpflanzer 28: 103-110. 1925.—A discussion of rice breeding in general, and a review of the work of numerous investigators, especially of recent years.—*J. C. Th. Uphof.*

7905. WINTERS, R. Y., S. W. HILL, AND P. H. KIME. Community cotton improvement in North Carolina. North Carolina Agric. College Ext. Circ. 108. 1920.—Results are reported on the work done in 25 counties. A number of varieties were tested and data are given on the yield of each per acre of seed cotton, lint, and seed; percentage and length of lint; and the money value of lint and seed. The plant-to-row method of improving cotton is outlined and data are given on results secured.—*D. T. Killough.*

7906. WISHART, J. Determination of $\int_0^\theta \cos^n + 1 \theta d\theta$ for large values of n , and its application to the probability integral of symmetrical frequency curves. Biometrika 17: 68-78. 1 fig. 1925.—Integral of Pearsonian Type IIa frequency curve is evaluated by expanding in incomplete normal moment functions, and auxiliary tables are given.—*J. R. Miner.*

7907. WITSCHI, E. Chromosomen und Geschlecht bei *Rana temporaria*. [Chromosomes and sex in *R. temporaria*.] Zeitschr. Indukt. Abstamm.- u. Vererb. 27: 253-255. 1922.

7908. WITSCHI, EMIL. Der Hermaphroditismus der Frosche und seine Bedeutung für das Geschlechts-Problem und die Lehre von der inneren Sekretion der Keimdrüsen. [Hermaphroditism of frogs and its significance for the sex problem and the endocrinology of the sex glands.] Arch. Entwicklungsmech. Org. 49: 316-358. 10 fig. 1921.

7909. WITSCHI, EMIL. Development of gonads and transformation of sex in the frog. Amer. Nat. 55: 529-538. 7 fig. 1921.

7910. WITTE, H. Luzern förädling. [Alfalfa improvement.] Sverges Utsades For. Tidskr. 31: 185-200. 1921.—In Sweden, alfalfa of Hungarian origin has been found most valuable but the so-called variegated types (from crosses of *M. sativa* \times *falcata*) also have given good results. The author therefore has tried to improve the alfalfa material by means of crossing these 2 species. Data from several F_1 and F_2 generations dealing with different characters are given. Because of the very complicated segregations, however, no explanation on a factor basis is attempted. The F_1 plants are intermediate in almost all characters and are good seed setters. The yield in green matter of already tested F_2 plants is relatively low, especially in regard to the later cuttings. Seed production is correlated with weight of plant and shows in the 2nd generation a wide range of variability.—*Gunnar Nilsson-Leissner.*

7911. WITTE, H. Några iakttagelser över fröfärgen hos rödklöver och dess ärftlighetsförhållanden. [Seed color in red clover and its inheritance.] Sveriges Utsadesfor. Tidskr. 31: 257-265. 1921.—The variation in seed-coat color of red clover is very large, from nearly white to dark violet. The white seed-coat color seems to be always combined with white corolla and absence of anthocyanin in the calyx and other green parts of the plant. This type is a recessive albino form. The common yellow seed color is dominant to white and shows when crossed with white a probable monohybrid segregation in the F_2 . In plants with white or almost white corollas and yellow seed the calyx always contains anthocyanin. This type is often segregated.—*Gunnar Nilsson-Leissner.*

7912. WOERDEMAN, W. M. On a human ovary with a large number of abnormal follicles and the genetic significance of this deviation. Sitzungsber. K. Akad. Wiss. Amsterdam 23: 448-459. 1920.

7913. WOLF, EGBERT. Die dahurische Larche. [*Larix dahurica*.] Mitteil. Deutsch. Dendrol. Ges. 35: 328-330. 1925.—*Larix dahurica* is rare in gardens and is often mistaken for *L. czekanowskii*. Hybrids between *L. dahurica* and *L. sibirica* originate in nature as well as under cultivation.—*J. C. Th. Uphof.*

7914. WOLFE, T. K., AND M. S. KIPPS. Pollination studies with orchard grass. Jour.

Amer. Soc. Agron. 17: 748-752. 1925.—Some clonal lines of orchard grass set a higher percentage of seed than others. The percentage of flowers setting plump seed when they were self-pollinated ranged from 1.2 to 17.5%; when close pollinated, 0.5 to 27.1%; and when open-pollinated, 7.3 to 50%. Self, close and open pollinated seed germinated equally well.—F. M. Schertz.

7915. WOODRUFF, LORANDE LOSS. The structure, life history, and intrageneric relationships of *Paramecium calkinsi* sp. nov. Biol. Bull. [Marine Biol. Lab., Woods Hole.] 41: 171-180. 7 fig. 1921.

7916. WOODRUFF, L. L., AND HOPE SPENCER. Survival value of conjugation. Proc. Soc. Exp. Biol. Med. 18: 303-304. 1921.

7917. WÓYCICKI, Z. Développement des anthères et formation des grains de pollen chez l'hybride stérile de *Nicotiana atropurpurea* Hort \times *Nicotiana silvestris* sp. et Comes. [Development of anthers and formation of pollen grains in the sterile hybrid *N. atropurpurea* Hort \times *N. silvestris*.] Arch. Soc. Sci. Varsaviensis 1: 1-63. 1921.

7918. WRIEDT, CHR., UND W. CHRISTIE. Zur Genetik der gesprenkelten Haustaube. [Genetics of mottled housedove.] Zeitschr. Indukt. Abstamm.-u. Vererb. 38: 271-306. 1925.—Extensive breeding experiments have demonstrated the presence of a new sex-linked dominant factor *St* for speckled marking. When *St* is combined with a recessive dilution factor, *d*, there is lowered viability. The linkage data for *St* and *d* show that the interval between them must be great. A new color factor, *B*, was demonstrated which when homozygous gives brown in the absence of black. When combined with the factor for red it gives brown, even in the presence of black. An intense homozygous brown is not distinguishable from black. There is a modifying factor, *bm*, which affects brown only in the heterozygous state. A factor *We* produces a white ground color in certain individuals carrying *St*. Combinations between *St* and different color factors produce various color types, the most probable genetic constitution of which is discussed.—H. C. McPhee.

7919. WRIGHT, SEWALL. Principles of livestock breeding. U. S. Dept. Agric. Dept. Bull. 905. 1-67. 25 fig. 1920.

7920. WRIGHT, SEWALL. The factors of the albino series of guinea-pigs and their effects on black and yellow pigmentation. Genetics 10: 223-253. 5 fig. 1925.—The 5 albino series allelomorphs in the guinea pig are the "intensity" factor *C*, the "dark dilution factor" *c^k*, the "light dilution factor" *c^d*, "red-eyed dilution" *c^r*, and albinism *c^a*. The average grades of the 15 known compounds of these factors with respect to black and yellow pigmentation in the fur and black in the eyes are discussed. The order of intensity of the compounds with respect to black in the fur is unmistakably different from the order with respect to yellow in the fur or black in the eyes. The compounds formed are generally such as would result if each of the 2 genes in the zygote affect pigment formation independently. The intensity factor *C* is completely dominant over all others. It is suggested that the albino series factors determine the rate of some physiological process which is fundamental to all pigmentation and that the various irregularities in effect on different pigments or in different parts of the body are caused by other physiological processes with which the albino series is not concerned.—H. C. McPhee.

7921. WRIGHT, SEWALL, AND PAUL A. LEWIS. Factors in the resistance of guinea pigs to tuberculosis with especial regard to inbreeding and heredity. Amer. Nat. 55: 20-50. 7 charts. 1921.

7922. WRIGHT, SEWALL, AND HUGH C. MCPHEE. An approximate method of calculating coefficients of inbreeding and relationship from livestock pedigrees. Jour. Agric. Res. 31: 377-383. 1925.—By tracing a strictly random line of ancestry back of both sire and dam of an individual animal the more complicated formula for the coefficient of inbreeding is reduced to the simple form, $F_x = \frac{1}{2} (1 + F_a)$, in which F_x is the coefficient required and F_a the inbreeding coefficient of the common ancestor which makes the ancestral tie between the 2 random lines. In any single determination the coefficient is either $\frac{1}{2} (1 + F_a)$ or 0. By determining the proportion of ties in a sufficiently large number of samples of a breed, family or individual, a measure of the average degree of inbreeding can be obtained to as high a degree of accuracy as desired. The probable error of F_x is given by the formula, $0.674 \sqrt{\frac{pq}{N}} \times \frac{F_x}{p}$, in which *p* is the

proportion of ties, q the proportion of pairs of lines which do not contain ties and N the number of pairs of lines compared. The formula for the coefficient of relationship between 2 animals

X and Y is $R_{xy} = \frac{1 + F_a}{\sqrt{(1 + F_x)(1 + F_y)}}$ and its probable error is $0.6745 \sqrt{\frac{pq}{N}} \times \frac{R_{xy}}{p} - H$. C

McPhee.

7923. WULZ, GUSTAV. Ein Beitrag zur Statistik der Verwandtenehen. [A contribution to the statistics of relationships.] Arch. Rass.- u. Ges. Biol. 17: 82-95. 1925.—The author has made a study of the church marriage records of a small rural parish, including 8 villages inhabited by 1200 persons, all Catholic. The degrees of relationship are separated into 8 grades, of which grade 3 is uncle-niece and grade 8 is great grandson-great granddaughter. Of the 1200 marriages studied 2 were related in the 4th degree, 2 in the 5th, 3 in the 6th and 1 in the 8th. To determine the probability of marrying a relative in a rural community without being aware of the fact, a study was made of the distances between birthplaces of man and wife, the number of relatives per person and the type of relationship in the group. Among the 1200 persons studied, the children of 1 couple were related to the children of 38 other couples. Eleven of 100 families were related to more than 30 other families, while 2 families were not related to any of 99 others. The material is too restricted for general conclusions but it is believed that extended studies will give a clear picture of the constitution of rural populations.—H. C. McPhee.

7924. YAMANE, JINSHIN, AND TSUNEZO EGASHIRA. On the relation of copulation to ovulation in the rabbit as shown by means of artificial insemination. Jour. Japanese Soc. Vet. Sci. 4: 101-112. 1925.—Artificial insemination was performed with 2 series of ♀ rabbits. Females of one series, which were inseminated without any other treatment, showed only 8.3% fertility. Females of the other series, which were inseminated after copulation with a sterile male, showed 62.5% fertility. Duration of pregnancy was one day longer in the latter cases than in the former. Thus the proof is fully established that in the rabbit in the majority of cases ovulation does not take place spontaneously, but needs the stimulus of copulation. Successful results with artificial insemination in the rabbit, therefore, can be obtained with a greater degree of certainty if preceded by copulation with a sterile male.—Authors' abstract (Contrib. by Absts. Bact.)

7925. YAP, S. E., AND E. V. PINEDA. Two interesting cases of ectrosyndactyly. Philippine Jour. Sci. 20: 1-13. 6 pl. 1922.

7926. YAROULINA, E. I. On the resistance of cereals to winter cold. (Russian with English résumé.) Ann. Agric. Facult. Univ. Saratov 1: 1-16. 1921.

7927. YASUKAWA, K. On the means, standard deviations, correlations, and frequency distributions of functions of variates. Biometrika 17: 211-237. 4 diagrams. 1925.—For values of coefficient of variation less than 8 if u and v are functions respectively of x and y , $r_{ux} \approx 1$; $r_{vy} \approx r_{xy}$; if x is normally distributed, u is somewhat skew. The effect of shifting a normal curve is investigated.—J. R. Miner.

7928. YATSU, N. Reproductive organs in heterosexual parabiosis of albino rats. Anatom. Rec. 21: 217-228. 7 pl. 1921.

7929. YATSUI, K. On the behavior of chromosomes in the meiotic phase of some artificially raised Papaver hybrids. Bot. Mag. Tokyo 35: 154-167. 1 pl., 1 fig. 1921.

7930. YOUNGMAN, W. Oomras cotton: the problem of the short staple. Empire Cotton Grow. Rev. 2: 309-316. 1925.

7931. ZADE, A. Werdegang und Züchtungsgrundlagen der landwirtschaftlichen Kulturpflanzen. [Progress and genetical principles of agricultural plants.] 104 p. B. G. Teubner, Leipzig, Berlin, 1921.

7932. ZADE, UND FÜSSEL. Ein praktisches Verfahren bei der Bestellung des Zuchtgartens. [A practical procedure in arranging the experimental garden.] Zeitschr. Pflanzenzücht. 8: 293-295. 2 fig. 1922.

7933. ZAMELS, A. Figuration graphique de marques caractéristiques communes. [Graphic representation of common characteristic marks.] Compt. Rend. Soc. Biol. 92: 884-888. 2 fig. 1925.—A system of signs is proposed by which one can show graphically for natural hybrids the factors entering in, such as geographical distribution, time of flowering, etc., and for

artificial hybrids, the method of formation, the parent plants, degree of sterility, etc.—*Oran Raber*.

7934. ZELNY, CHARLES. Decrease in sexual dimorphism of bar-eye *Drosophila* during the course of selection for low and high facet number. *Amer. Nat.* 55:404-411. 2 fig. 1921.

7935. ZELNY, CHARLES. The effect of selection for eye facet number in the white bar-eye race of *Drosophila melanogaster*. *Genetics* 7:1-115. 125 fig. 1922.—An intensive study of the germinal and environmental factors affecting eye-facet number in *Drosophila*. Its objects were the determination (1) of the character of the germinal diversity present in the stock and (2) the manner of appearance of germinal changes during the course of selection. The stock used was white-bar, in which the facet number is variable and much less than in the wild stock. The studies covered 42 generations of selection for high facet number and also for low facet number. The experiments showed 1st that bar mutates to full eye fairly frequently (1 in 1600 individuals); and conversely, bar mutates to ultra-bar with considerably less frequency. These mutations are independent of the actual selection process. Neglecting the mutations, selection caused a rapid increase in mean facet number during the first 5 generations, and in the other direction selection caused a rapid decrease in facet number during the first 3 generations. In both cases there was a rapid decrease in variability, but no extension of the range upward nor downward. The whole change was brought about by elimination of individuals selected against. Further selection in both directions was without effect. These facts demonstrate the existence of definite hereditary factors for facet number which are sorted out by selection. These results are in agreement with the general trend of recent work on the nature of the selection effect.—*H. H. Plough*.

7936. ZELNY, CHARLES. The relative numbers of twins and triplets. *Science* 53: 262-263. 1921.

7937. ZIESCH, HANS. Statistisch-genealogische Untersuchungen über die Ursachen der Rachitis, insbesondere ihre Erbllichkeit. [Statistical-genealogical investigations on the causes of rachitis, especially its inheritance.] *Arch. Rass.- u. Ges. Biol.* 17: 61-80. 1925.—From the study of 12 pedigrees, the author concludes that the most essential cause of rachitis is probably the idiotypic condition—heredity. Much speaks for dominant heredity; but not certainly. The precise symptom-group and localization of the disease also are hereditary. Nutritional factors are effective in rachitis when the hereditary conditions are present. Absence of sunlight and fresh air are other factors that release the rachitic symptoms.—*Charles B. Davenport*.

7938. ZIMMERMANN, FRIEDRICH. Untersuchungen über die Variabilität einiger Arten des Genus *Carychium* Müller. [Investigation on variability of species of *Carychium*.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 37: 291-342. 4 fig. 1925.

HORTICULTURE

F. C. BRADFORD, *Editor*

(See also in this issue Entries 5935, 5941, 5954, 5963, 6243, 6245, 6475, 6630, 6633, 6858, 7071, 7147, 7229, 7295, 7302, 7303, 7324, 7344, 7365, 7366, 7371, 7468, 7494, 7509, 7515, 7537, 7552, 7646, 7658, 7678, 7723, 7729, 7796, 7850, 7859, 7874, 7913, 8143, 8166, 8756, 8786, 8819, 8829, 8838, 8853, 8868, 8882, 8892, 8894, 8900, 8917, 8920, 9015, 9105, 9224, 9270, 9271, 9340, 9367, 9396, 9413, 9462, 9540, 9861)

7939. ANONYMOUS. Horticultural standards. 25 p. Amer. Assoc. Nurserymen, Inc.: Boston, 1923.

7940. ANONYMOUS. Lists of seeds of hardy herbaceous plants and of trees and shrubs. *Kew Bull.* Appendix I and IV. 1925: 1-36, 87-121. 1925.—This is an extensive list of seed recently ripened at Kew available for exchange.—*T. J. Fitzpatrick*.

7941. ANONYMOUS. [Rev. of: NOLHAC, PIERRE DE. The gardens of the Trianon. Translated by F. MABEL ROBINSON, T. Fisher Unwin, Ltd.: London, 1925.] *Gard. Chron.* [London] III. 78: 310. 1925.—The history and development of the gardens are reviewed editorially.—*P. L. Ricker*.

7942. ARENS, P., N. L. START, EN A. A. L. RUTGERS. *Handboek voor de rubbercultuur in Nederlandsch-Indie*. xv + 777 p., 14 pl., H. H. de Bussy: Amsterdam, 1921.

7943. ARNOTT, S. *The Bamboos*. Gard. Chron. [London] III. 77: 398-399. 1925.—Descriptive notes on species suitable for cultivation are given.—*P. L. Ricker*.

7944. BAHR, FRITZ. *Fritz Bahr's commercial floriculture; a practical manual for the retail grower*. 599 p. A. T. De la Mare Co.: New York, 1922.

7945. BAILEY, L. H. *Acanthosabal*. Gard. Chron. [London] III. 77: 396, 180-181, 2 p. 1925.—This article suggests that the palm described by Proschowsky (Ibid. 77: 91. 1925) is identical with one growing at Demerara, probably originally collected in Florida and described by Sargent as *Serenoa arborescens*. It was later transferred to *Acoelorrhaphe* (Paurotis) by H. Wendland.—*P. L. Ricker*.

7946. BAILEY, LIBERTY HYDE. *The gardener: a book of brief directions for the growing of the common fruits, vegetables and flowers in the garden and about the house*. xii + 260 p. The Macmillan Company: New York, 1925.

7947. BARKER, B. T. P. *Recent research in fruit culture in the British Isles*. Welsh Jour. Agric. 1: 156-161. 1925.

7948. BARNES, PARKER T. *House plants and how to grow them*. x + 242 p. Doubleday, Page & Co.: Garden City, New York, 1923.

7949. BARRON, LEONARD. *Flower growing*, revised and adapted from the text of I. M. Bennett's "The flower garden." ix + 255 p. Doubleday, Page & Co.: Garden City, New York, 1924.

7950. BEAN, WILLIAM JACKSON. *Shrubs for amateurs*. viii + 116 p. "Country Life," Ltd.: London; C. Scribner's Sons: New York, 1924.

7951. BEAN, W. J. *Trees and shrubs hardy in the British Isles*. J. Murray: London, 1921.

7952. BECKWITH, CHARLES S. *Report of the cranberry substation*. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 300-305. 1925.—In a continuation of the plant-nutrient studies on cranberries, an application of 140 pounds NaNO_3 gave an increase of 166% over the check plots and 121% over equivalent amounts of N in the form of dried blood. In a test with a complete fertilizer, highest yield increases followed an application of 1056 pounds of a 4-15-5 mixture. The fertilizer treatments resulted in increases in fruit size, bearing ability of tips, the number of fruits per tip and total number of tips. Use of rock phosphate resulted in little difference in vegetative vigor but gave yield increases. In a study of fertilizer ratios on muck land, fertilizer treatments made in 1920 are just beginning to show beneficial results. These studies indicate that potash has no influence on size of crop and suggest a 10-30 mixture as most desirable. Spraying with 4-4-50 Bordeaux mixture plus 2 pounds of resin fish-oil soap considerably reduced the amount of rotted fruit.—*Wm. H. Martin*.

7953. BECKWITH, CHARLES S., AND JESSIE G. FISKE. *Weeds of Cranberry bogs*. New Jersey Agric. Exp. Sta. Circ. 171. 1-22, 22 fig. 1925.—Fifty different plants are reported as common in bogs but only 10 are considered particularly obnoxious and difficult to control. Descriptions of these, together with control measures, are given.—*Wm. H. Martin*.

7954. BENNETT, FANNY, AND ELEANOR S. ROHDE. *A vegetable grower's handbook*. 184 p. Martin Hopkinson, Ltd.: London, 1923.

7955. BENNETT, IDA DANDRIDGE. *The vegetable garden*. (Revised and enlarged by ADOLPH KRUN.) xii + 231 p. Doubleday, Page & Co.: Garden City, New York, 1923.

7956. BISSET, PETER. *The book of water gardening*. 205 p. A. T. De la Mare Company: New York, 1924.

7957. BLAKE, M. A. *The pruning of shrubs*. New Jersey Agric. Exp. Sta. Circ. 176. 1-8. 1925.

7958. BOWLES, EDWARD AUGUSTUS. *A handbook of Crocus and Colchicum for gardeners*. M. Hopkinson & Co.: London, 1924.

7959. BOYNTON, KENNETH R. *Malus glaucescens*. Addisonia 10: 55. 1 (col.) pl. 1925.—This is a small tree with very ornamental flower clusters, native of central U. S. A., spreading northward to Ontario and eastward to South Carolina. It has long been confused with *M. coronaria*. It is readily cultivated in the orchard.—*T. J. Fitzpatrick*.

7960. BOYNTON, KENNETH R. *Malus pulcherrima scheideckeri*. *Addisonia* 10: 53. 1 (col.) pl. 1925.—This is a small tree of horticultural origin, with highly ornamental flower clusters, and slightly double flowers. It is readily propagated in the open.—*T. J. Fitzpatrick*.
7961. BREWSTER, KATE L. The little garden for little money. vi + 108 p. The Atlantic Monthly Press: Boston, 1924.
7962. BROWN, THOMAS WILLIAM. Date palm in Egypt. 39 p., 1 pl. Government Press: Cairo, 1924.
7963. BROWN, THOMAS WILLIAM. The propagation and cultivation of citrus trees in Egypt. 88 p. Government Press: Cairo, 1924.
7964. BURKILL, I. H. *Solanum macrocarpon*. *Kew Bull.* 1925: 333-341. 1925.—This is a widely cultivated herb of Africa and elsewhere. The botanical and horticultural history of the plant from 1682 to the present is given.—*T. J. Fitzpatrick*.
7965. BURRITT, M. C. Apple growing. 177 p. Macmillan Co.: New York, London, 1923.
7966. BURROWS, GEORGE. Fruit growing in the Punjab. *Gard. Chron.* [London] III. 77: 452. 1925.—A list of the most popular fruits is given and conditions of growth and marketing are discussed.—*P. L. Ricker*.
7967. BYNE, MILDRED STAPLEY, AND ARTHUR BYNE. Spanish gardens and patios. 306 p. J. B. Lippincott Co.: Philadelphia and London; The Architectural Record: New York, 1924.
7968. CARDENAS, JULIO DE, Y EDUARDO MORENO. Las frutas de Cuba; contribucion a su estudio; analisis bromatologico completo. [Fruits of Cuba.] 63 p. Imprenta y Papeleria de Rambla, Bouza y ca: Habana, 1923.
7969. CARTER, GEORGE. The South African home garden. (A practical treatise on the various aspects of home gardening in South Africa, with 2 special articles on fungus and insect garden pests.) 199 p. Geo. Carter & Co.: Maritzburg, 1922.
7970. CLARKSON, EDWARD H. Autumn frosts and the ferns. *Amer. Fern. Jour.* 13: 45-47. 1923.
7971. COLBY, C. C. The apple industry of the Annapolis-Cornwallis Valley. *Economic Geography* 1: 337-355. 15 fig. 1925.—This is the concluding paper on the apple industry of the Annapolis-Cornwallis valley (see *Bot. Absts.* 15, Entry 3643).—*William H. Cole*.
7972. COLLISON, R. C., AND J. D. HARLAN. Final report on the cooperative experiments in orchard fertilization. New York [Geneva] Agric. Exp. Sta. Bull. 503. 1-21. 1923.—One cherry and 3 apple orchards were systematically treated with various combinations of commercial fertilizer for periods of 8-10 years. Nitrogen alone or in combination consistently increased the growth, but not the yield, of cherry trees. In the apple orchards commercial fertilizers consistently increased neither growth nor yield. All of the Station's work to date indicates that, practically, it has not paid to use commercial fertilizers in well-cared-for orchards on the better fruit soils of western New York.—*F. C. Stewart*.
7973. CONNORS, C. H. Accelerating root formation in carnation cuttings. *Florists' Exchange* 57: 1354. 1 fig. 1924.—The sand of the cutting bench was soaked with a solution of potassium permanganate, 1-1000 in water, before inserting the cuttings. The period for rooting was shortened a week by the treatment, rooting was more uniform, and root development was improved.—*F. F. Weinard*.
7974. CONNORS, C. H. Floriculture experiments. *New Jersey Agric. Exp. Sta. Ann. Rept.* 45: 73-76. 2 pl. 1924 [1925].—The addition of 5000 pounds of aluminum sulphate, ammonium aluminum sulphate or sulphur to a neutral soil causes hydrangeas to produce blue blooms. When hydrangeas were grown in liquid media adjusted to pH 4.8-6.6 the plants produced blooms, all of which were the same color, due to the fact that the pH values in all the cultures increased rapidly and were soon on a par.—A brief statement of cultural studies with ornamentals is given.—Carnation cuttings grown in sand watered with a solution of 1 ounce of potassium permanganate in 8 gallons of water, at the rate of 1 gallon to the square foot, showed a much more extensive and uniform root system than cuttings grown in sand without the treatment.—*Wm. H. Martin*.
7975. CONNORS, CHARLES H. Roses in the garden. *New Jersey Agric. Exp. Sta. Circ.* 172. 1-27. 13 fig. 1924.

7976. CONNORS, C. H. The effect of lime upon hydrangeas. *Florists' Exchange* 53: 473, 503. 2 fig. 1922.—Five varieties of hydrangeas were grown in a neutral potting soil to which was added air slaked lime in various amounts and ground limestone at the rate of 3.68 ounces per cubic foot of soil. Increments of more than 0.37 ounce per cubic foot (1000 pounds per acre) of slaked lime caused yellowing of the foliage. No yellowing was noted with the ground limestone. The soil reaction necessary to give the best results as to growth, disregarding the influence on flower color, was not determined.—*F. F. Weinard*.

7977. COOK, ERNEST THOMAS. *Gardens of England*. 2nd. ed. viii + 199 p. A. & C. Black, Ltd.: London, 1923.

7978. COON, NELSON. The small nursery; a discussion of first principles governing its successful establishment. viii + 125 p. The A. T. De La Mare Co., Inc.: New York, 1923.

7979. CORREYON, H. Raising Alpine from seed. *Gard. Chron.* [London] III. 77: 180. 1925.—Slow germinating kinds should be sown deep. Soaking the seed in a 5–10% fresh malt solution for 24 hours gave good results, as did permanganate of potash. Old seed sown then covered with snow for a fortnight and finally brought into a warm place germinated very well.—*P. L. Ricker*.

7980. COTTER, JAMES LAURENCE. The culture of bulbs, bulbous plants and tubers made plain. xiii + 15–192 p. *Illus.* Hutchinson and Co.: London, 1924.

7981. CRANE, HOWARD HAMP. *Violas and pansies for exhibition and for garden decoration*. 31 p. Chas. Scribner's Sons: New York; Country Life, Ltd.: London, 1921.

7982. CRAWFORD, MATTHEW. The gladiolus; a practical treatise on the culture of the gladiolus, with notes on its history, storage, diseases, etc. Appendix by W. VAN FLEET. Addenda by J. C. VAUGHAN. 2nd ed. 100 p. Vaughan's Seed Store: Chicago and New York, 1921.

7983. CUBBON, M. H. Effect of a rye crop on the growth of grapes. *Jour. Amer. Soc. Agron.* 17: 568–577. 1925.—One year's growth indicates that a rye crop has a retarding effect on grape plants growing in very fertile soil where nitrates and moisture are present in rather large quantities. The author concludes that where fruit trees are grown under sod, a chemical substance, as a growth-inhibiting agent, must exist.—*F. M. Schertz*.

7984. DALLIMORE, W. *Evodia hupehensis* Dode. *Kew Bull.* 1925: 352. 1925.—This is a tree of the family *Rutaceae*, native of western China, introduced into England in 1907. The tree, not difficult to cultivate, has ornamental fruits, brilliant red, which remain in good condition for 8–9 weeks.—*T. J. Fitzpatrick*.

7985. DALY, P. M. Identification of apple trees by leaf characters. *Sci. Agric.* 5^o: 250–254. 1925.—Since the beginning of the commercial nursery industry orchardists generally have complained of the sending out of trees which later have proved untrue to name. Working along the lines followed by Shaw (1915–1923), a study has been made, at the Central Experimental Farm, Ottawa, of the leaf characters of apple varieties, some 20 distinctive characters having been utilized. Leaf descriptions have been made of the Alexander, Bethel, Delicious, Dudley, Fameuse, Golden Russet, Lowland Raspberry, Melba, McIntosh, Milwaukee, Northern Spy, Oldenburg (Duchess), Scott Winter, Stayman Winesap, Wealthy, Wolf River and Yellow Transparent varieties. An examination of between 20,000 and 25,000 2- and 3-year old trees in 1 nursery showed that approximately 2½% were untrue to name.—*T. G. Major*.

7986. DALZIEL, J. M. [Rev. of: WESTER, P. J. *The food plants of the Philippines*. x + 236 p. 67 pl., 1 fig., 1 map. Bureau of Agriculture: Manila, 1924.] *Kew Bull.* 1925: 286. 1925.—The work considers the staples as well as the successful introductions since American occupation.—*T. J. Fitzpatrick*.

7987. DAVIS, M. B. Factors influencing strawberry production. *Sci. Agric.* 5^o: 196–198. 1925.—In order to secure maximum results from a strawberry plot the following cultural practices should be carried out: (1) Manure the year previous to planting. (2) Plant in early spring using strong, healthy plants. (3) Use narrow rows. (4) Encourage early runner formation by cultivation and use of nitrogen. (5) Remove late-formed runners after full stand of 4 plants per sq. foot is obtained. (6) Apply readily available nitrogen during August to encourage fruit-bud formation. (7) Give light applications of nitrogen in spring to increase size of fruit and give better set.—*T. G. Major*.

7988. DAVIS, W. **Plant propagation.** Ed. by W. D. DRURY. 211 p. "Bazaar, Exchange and Mart:" London, 1922.

7989. DAVY, J. BURTT. *Musa Davyae* in extra-tropical Transvaal. Kew Bull. 1925: 365-367. 1925.—The Transvaal wild banana, a very decorative plant, grows in tropical and to a limited extent in extra-tropical Africa. The history of specimens and distribution is given.—*T. J. Fitzpatrick.*

7990. DEONG, E. R. **The honeybee as a pollenizer.** California Agric. Exp. Sta. Circ. 297. 17-22. 1925.—The superiority of the honeybee as a pollenizer is due to these facts: (1) The workers do not die in the fall or early winter as do those of many other species. (2) It winters in an active condition instead of being dormant or resting in the egg or pupal stage as do most bees. (3) It is the only insect pollenizer which can be distributed as desired in the orchard. (4) It is possible to build up a colony so that a large number will be available very early in the spring. By proper timing of the giving of extra food, egg-laying may be made to begin sufficiently early so that the increase in the number of bees will occur just before the blooming season.—*A. R. C. Haas.*

7991. DEUSS, J. J. B. **De sap-concentratie in het verflenste blad.** [The sap concentration in wilted leaves.] Dept. Landb. Nijverheid en. Handel, Mededeel. Proefsta. Thee Nederland.-Indië 93: 20-25. *Illus.*, 1925.—Tea obtained in the dry season is the best in every respect. The amount of wilting to which the harvested leaves should be subjected varies according to the water content of the leaf at the beginning.—*Carl Hartley.*

7992. DICKS, S. B. **The cabbage.** Gard. Chron. [London] III, 78: 316-317, *Pl. 129-130*; 340-341, *Pl. 145.* 1925.—This paper discusses the origin, early history and development of modern varieties.—*P. L. Ricker.*

7993. DICKS, S. B. **The dandelion.** Gard. Chron. [London] III, 78: 253. *1 pl.* 1925.—Descriptions are given of fine horticultural varieties and their cultivation.—*P. L. Ricker.*

7994. DICKS, S. B. **The tomato.** Gard. Chron. [London] III, 77: 98-99. *1 pl.* 1925.—The history of the tomato is traced from Gesner to the present.—*P. L. Ricker.*

7995. DRAIN, BROOKS DANIEL. **Essentials of systematic pomology.** 284 p. J. Wiley & Sons: New York, 1925.

7996. DURAND, HERBERT. **Taming the wildings; a book of cultural information for lovers of our wild flowers, wild bushes, and ferns, who desire to grow them for landscape and garden effects, or for planting.** *xxix + 380 p.* G. P. Putnam's Sons: New York, London, 1923.

7997. DYER, BERNARD SHIRLEY, AND F. W. E. SHRIVELL. **The manuring of market garden crops.** *148 p.* G. Street & Co., Ltd.: London, 1924.

7998. DYKES, WM. R. **Some species of tulip.** Gard. Chron. [London] III, 77: 336. 1925.—This paper presents descriptive notes of various wild species worthy of being generally cultivated.—*P. L. Ricker.*

7999. ELLIS, MERTON G. **Making them grow; a treatise on the rapid propagation of the new and higher priced gladioli.** *118 p.* Portland, Oregon, 1923.

8000. ELMO, MARIO T. DELL. **Bosnian prunes.** Gard. Chron. [London] III, 78: 313-314, *1 pl.*; 333-334, *1 pl.* 1925.—This paper sketches the development of the prune industry in Bosnia.—*P. L. Ricker.*

8001. FAIRBRIDGE, DOROTHEA. **Gardens of South Africa.** *viii + 212 p.* A. & C. Black: London, 1924.

8002. FARGO, CLARENCE B. **Planning and planting for the home beautiful.** *222 p.* Clarence B. Fargo: New York, 1925.

8003. FARLEY, A. J. **Report of the department of pomology.** New Jersey Agric. Exp. Sta. Ann. Rept. 45: 46-69. 1924 [1925].—The use of atomic sulfur, 5 pounds to 50 gallons of water, and 2-4-50 dry mix sulphur lime, plus 1½ pounds of arsenate of lead on peaches resulted in serious defoliation. Increasing the amount of sulphur in the dry-mix decreased the burning, an 8-4-50 mixture giving only slight injury. Laboratory tests show that lead arsenate in combination with hydrated or freshly slaked lime is decomposed and converted into basic lead arsenate and insoluble tri-calcium arsenate; the latter compound is decomposed with the formation of soluble acid calcium arsenate by the action of carbon dioxide.—In a spray test with apples the control of scab following the use of dry-mix sulphur lime, starting at petal

fall, was as effective as where concentrated lime-sulphur was used. The latter material was more effective, however, for the pink application.—There is evidently a relatively long period during which the different varieties may be thinned with equal effectiveness, good results being secured after the pits had hardened. Though excessive thinning results in decreased yields, heavy thinning increases the number of large fruits without materially decreasing the yield.—Blooming dates of apples and peaches are given as well as weather conditions for the year.—*Wm. H. Martin.*

8004. FAURE, GABRIEL. *The gardens of Rome.* ix + 100 p. 3 pl. Brentano's, Inc.: New York, 1924.

8005. FORESTIER, JEAN C. *Gardens; a note-book of plans and sketches.* (Translated from the French by HELEN MORGENTHAU FOX.) x + 237 p. C. Scribner's Sons; New York, London, 1924.

8006. FRIEND, HILDERIC. *The garden in antiquity.* Gard. Chron. [London] III. 77: 94, 130-131, 184, 252, 284, 374-375, 436; 78: 70-71, 106, 150-151, 210, 250, 311-312, 350, 390, 430. 1925.—*P. L. Ricker.*

8007. FUSCHINI, C. *I caspuglieti di gelso.* [The mulberry in bush form.] Boll. R. Staz. Sper. Gelsicolt. e Bachicolt. Ascoli Piceno 4: 1-40. 1925.

8008. GARCIA, F. *Improved variety No. 9 of native chili.* New Mexico Agric. Exp. Sta. Bull. 124. 1-16. 7 fig. 1921.

8009. GILMAN, ROLAND B. *The pruning book.*—110 p. H. Disston & Sons, Inc.: Philadelphia, 1924.

8010. GLADWIN, F. E. *The behavior of American grapes grafted on vigorous stocks.* New York [Geneva] Agric. Exp. Sta. Bull. 508. 1-54. 6 pl. 1924.—Six varieties of American grapes (Catawba, Concord, Delaware, Iona, Niagara, and Campbell Early) were grafted onto 2 French stocks, Riparia Gloire de Montpellier and Rupestris St. George du Lot, and also onto the Clinton, a Labrusca-Riparia hybrid. The grafted plants and a like number of ungrafted plants of the same varieties were planted at Fredonia, N. Y., in 1915, and all given the same care and cultivation. Quantity and quality of fruit, wood growth, and trunk girth were the criteria used in judging the effect of grafting. Data for 1919-1923 indicate, all things considered, that Riparia Gloire is the best stock for Delaware, that Clinton and Gloire are of about equal value for Campbell, that Clinton is the best stock for Niagara, and Gloire for Concord. For Iona, the choice lies between Clinton and St. George, while Catawba unquestionably does best on Clinton. With Delaware, Campbell, Niagara, and Concord, the quality of the fruit was markedly superior on all of the grafted vines. Grafting did not materially affect the time of foliation or the time of ripening of the fruit.—*F. C. Stewart.*

8011. GROVE, A. *Influence of electric light on plant growth.* Gard. Chron. [London] III, 78: 469-470. 1 fig. 1925.—Notes on experiments by Barlow Matthews of East Grinstead, England, from the Electrical Review of October 30, 1925, p. 685.—*P. L. Ricker.*

8012. GROVE, A. *Nomocharis.* Gard. Chron. [London] III, 77: 148-150. Pl. 58-59. 1925. This paper notes a little known plant from Yunnan.—*P. L. Ricker.*

8013. GROVE, A. *Notes on Lilies.* Gard. Chron. [London] III, 78: 190. 1 pl.; 210-212. 1 pl. 1925.—This paper contains notes on the value, treatment and peculiarities of a number of species, varieties and hybrids of lilies.—*P. L. Ricker.*

8014. GUNSTON, H. W., AND G. W. HAWKES. *Principles and practice of school gardening and connected handwork.* (Pitman's Handwork Series). 195 p. Pitman & Sons: London, 1922.

8015. HALLIGAN, C. P. *Michigan tree fruit varieties.* Michigan Agric. Exp. Sta. Quart. Bull. 4: 91. 1922.

8016. HAMBLIN, STEPHEN FRANCIS. *Lists of plant types for landscape planting; the materials of planting for ornament listed according to their various uses.* Harvard Univ. Press: Cambridge, 1923.

8017. HAMPDEN, MARY. *Bulb gardening.* (Home Garden Books.) New ed. 221 p. Thornton Butterworth, Ltd.: London, 1923.

8018. HAMPDEN, MARY. *Rose gardening.* (Home Garden Books.) New ed. 231 p. Thornton Butterworth, Ltd.: London, 1923.

8019. HAMPDEN, MARY. *Town gardening*. (Home Garden Books.) New ed. 160 p. Thornton Butterworth, Ltd.: London, 1923.

8020. HARDING, ALICE H. *Peonies in the little garden*. viii + 91 p. Atlantic Monthly Press: Boston, 1923.

8021. HATTON, RICHARD GEORGE, AND WALTER R. ELGAR. *Practical fruit farming*. 87 p. J. Murray: London, 1922.

8022. HEDRICK, ULYSSES PRENTISS. *Manual of American grape-growing*. xiii + 458 p. The Macmillan Co.: New York, 1924.

8023. HEDRICK, U. P. *New or noteworthy fruits*. VI. New York [Geneva] Agric. Exp. Sta. Bull. 497. 1-19. 8 pl. (3 col). 1923.—This paper discusses 3 varieties of apples, 7 of grapes, 3 of raspberries, 3 of strawberries, and 1 each of pear, peach, cherry, and nectarine. Each variety is fully described and an account is given of its origin and important characters. Eighteen of the varieties treated are introductions of the Experiment Station (Cortland, Red Spy, and Tioga apples; Cayuga pear; Hunter nectarine; Brocton, Dunkirk, Ontario, Portland, Ripley, Sheridan, and Urbana grapes; Cayuga, Owasco, and Seneca raspberries; and Beacon, Bliss, and Boquet strawberries). Several of the varieties described are thought to be valuable acquisitions.—*F. C. Stewart*.

8024. HEDRICK, U. P. *Stocks for plums*. New York [Geneva] Agric. Exp. Sta. Bull. 498. 1-19. 6 pl. 1923.—Following a general discussion of the relation of stock and cion and of its importance to fruit growers, the author makes a 10 years' progress report on experiments designed to determine which species make the best stocks for the several species of cultivated plums in New York. The 6 stocks under test were Americana (*Prunus americana*), Mariana (*P. cerasifera* × *P. munsoniana*), Myrobalan (*P. cerasifera*), St. Julien (*P. insititia*), budded, peach (*P. persica*), and grafted peach. Six species of plums (*Prunus domestica*, *P. insititia*, *P. salicina*, *P. hortulana*, *P. munsoniana*, and *P. americana*) represented by 15 varieties were used in the test. The conclusion reached is, that of the stocks now in general use for plums in this region, Myrobalan is the most satisfactory for the domestica, insititia, and Japanese varieties, the only species of this fruit commonly grown in New York State.—*F. C. Stewart*.

8025. HENSLOW, THOMAS C. W. *Garden construction*. xi + xv + 32 p. Odhams Press, Ltd.: London, 1923.

8026. HENSLOW, THOMAS GEOFFREY WALL. *Garden development*. ix + xviii + 352 p. Dean and Son, Ltd.: London, 1923.

8027. HENSLOW, THOMAS GEOFFREY WALL. *Garden improvement*. 368 p. Brentano: New York, 1924.

8028. HEPLER, J. R. *Gardening in New Hampshire*. New Hampshire Agric. Exp. Sta. Ext. Bull. 25. 2-56. 25 fig. 1924.—This is an exposition of methods used in growing, harvesting, and storing vegetable crops.—*G. F. Potter*.

8029. HEPLER, J. R., AND H. R. KRAYBILL. *The effects of phosphorus upon the yield and time of maturity of the tomato*. New Hampshire Agric. Exp. Sta. Tech. Bull. 28. 2-43. 14 fig. 1925.—Acid phosphate when used with manure gave larger crops and earlier ripening. When used with KCl its effects were greatly reduced. Potash used alone delayed maturity. Where the amount of manure was doubled, the bulk of the fruit ripened later and the total yields were lower than with the phosphate treatments. The time required for an individual tomato to ripen from setting, the number of blossoms per cluster and the average size of the fruit were approximately the same under all treatments. The reason for the earlier maturity on the acid phosphate plots therefore lay in the earlier setting of the fruit. Growth measurements showed that 6 weeks after setting, the plants on the acid phosphate plots were 2-3 times as large as on the other treatments, and had formed proportionately more flower clusters. The effect of acid phosphate is due to the fact that it promotes rapid early growth of the plant so that a much larger number of blossom clusters, blossoms and fruit are produced early.—*J. R. Hepler*.

8030. HILL, A. H. *Review of the work of the Royal Botanic Gardens, Kew, during 1924*. Kew Bull. Appendix II 1925: 37-68. 1925.

8031. HOOPER, C. H. *Fruit farming*. 2nd. ed., Lockwood Press: London, 1921.

8032. HOWE, G. H. *Growth and yield of apple trees pruned in various ways*. New York [Geneva] Agric. Exp. Sta. Bull. 500. 1-22. 6 pl. 1923.—Experiments covering 10 years were

made to determine how young apple trees react to different methods of pruning: (a) Little versus much pruning, (b) winter vs. summer pruning, and (c) high vs. low heading. In each of the 3 experiments 6 trees of each of 9 common varieties were used.—With most varieties light pruning resulted in stockier trunks and branches and a greater bearing area though not always in a larger yield of fruit. The season of pruning appeared to have little influence. Low headed trees became larger and more vigorous than the high headed and yielded more fruit. Low heading also facilitated pruning, spraying, and picking the fruit.—*F. C. Stewart.*

8033. HUBER, H. F. Miscellaneous vegetable studies in northern New Jersey. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 87-103. 1 pl. 1924 [1925].—In a variety test including 40 lots of spinach the disease-resistant Savoy strain developed by the Virginia Exp. Sta. proved very resistant to mosaic and showed no winter injury.—With spinach 500 pounds of a 4-8-4 fertilizer plus 10 tons of manure yielded 371 crates as compared with 295 crates where 1000 pounds of the 4-8-4 mixture was used alone. In a comparison of fertilizer amounts, 1600 pounds of a 9-8-3 gave highest yield returns (289 crates). This same amount in 2 applications gave 275 crates.—With cauliflower an application of 1000 pounds of a 4-8-4 plus 10 tons of manure and 150 pounds of NaNO_3 gave a larger number of marketable heads than 20 tons of manure alone. The largest number of heads resulted from the application of 1000 pounds of a 4-8-4 fertilizer plus 2 side dressings of NaNO_3 . Where a moderate amount of fertilizer was used, it was more profitable to apply part before planting and the balance as a side dressing.—In a variety test with cauliflower, Erfurt was the best and Dry Weather the poorest of the varieties tested.—In a varietal study with early lettuce, Salamander gave the largest percentage of marketable heads. In tests with the fall crop, New York gave best yields.—*Wm. H. Martin.*

8034. IMPERIAL INSTITUTE, DIRECTOR. Banana cultivation in the Canary Islands. Bull. Imp. Inst. Gr. Brit. 23: 163-174. 1925.—This paper summarizes the status of the banana industry on these islands, to which several thousand acres, mainly of terraced lands in the valleys, are devoted.—*L. A. Kenoyer.*

8035. IRVING, WALTER, AND REGINALD A. MALBY. Saxifrages or rockfoils. 158 p. The Swarthmore Press: London, 1923.

8036. JAMESON, H. G. Trees and flowers of England and Wales. 148 p. Simpkin, Marshall & Co.: London, 1923.

8037. [KARTASHEVA, S. A.] Карташева, С. А. Корневая система бахчевых растений. [The root-system of water-melons, melons and cucurbits]. (English summary.) Труды Прикл. Бот. Селекции [Bull. Appl. Bot. & Plantbreed.] 14²: 79-87. 2 fig. 1924-1925 [1925].—The author studied the root-system of watermelons, melons and cucurbits in natural soil conditions. The chief mass of roots was in the layer 40-50 cm. below the surface. The lateral roots of the first order are longer than the chief root and spread horizontally in various directions. Sometimes in watermelons (citrons) the separate roots are 4-5 m. long. In general, the lateral root sprouts are equal to the above ground branches of the plants. Each of the lateral roots of 1st order has a mass of thin branches of 2nd, 3rd order, etc. All these interlacing roots form an entire net, the diameter of which sometimes is 8-10 m.—The root-system of cucurbits is not so well developed; the root-system of melons and especially of cucumbers is in general like that of watermelons and cucurbits, though considerably smaller.—*Author's summary.*

8038. [KASHCHENKO, N. F.] Кащенко, Н. Ф. О некоторых лекарственных и других растениях, разводимых в Киевском акклиматизационном саду. [Some medicinal and other plants grown in the acclimatization garden in Kiev.] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14²: 137-138. 1924-1925. [1925].—The acclimatization garden in Kiev was laid out by the author in 1915 and belongs at present to the Ukraine Academy of Sciences. During the existence of this garden there were tested up to 200 species, chiefly of different medicinal plants; of the latter the most interesting were singled out, as *Digitalis purpurea* L. and *Valeriana exaltata* Mixan. In addition, the author has reared in this garden a winter-hardy peach variety that bears abundant fruits, as well as several varieties of apricots and 1 variety of currants.—*Author's summary.*

8039. KIGHTLEY, WILLIAM J. Chrysanthemums and dahlias, their propagation and culture. 80 p. Specialty Press of South Africa: Johannesburg, 1921.

8040. KING, LOUISA YEOMANS. (MRS. FRANCIS KING.) *Chronicles of the garden.* *xii* + 276 p. C. Scribner's Sons: New York, London, 1925.

8041. KING, LOUISA YEOMANS. (MRS. FRANCIS KING.) *Variety in the little garden.* 3 + 120 p. Atlantic Monthly Press: Boston, 1923.

8042. KNAPP, ARTHUR W. *The cocoa and chocolate industry: the tree, the bean, the beverage.* *xii* + 147 p. I. Pitman & Sons, Ltd.: London, 1923.

8043. KRAKER, J. L. *Fertilization of a sour cherry orchard.* Michigan Agric. Exp. Sta. Quart. Bull 5: 162-164. 1923.

8044. KRAYBILL, H. R. *Effect of shading and ringing upon chemical composition of apple and peach trees.* New Hampshire Agric. Exp. Sta. Tech. Bull. 23. 3-27. 1923.—Shading of 12-year-old Duchess apple trees, which reduced fruit-bud formation from 65 practically to 0%, resulted in higher moisture and total N but lower sugars and starch, in growth of the last 2 seasons sampled during June and July. Shading of Carman and Elberta peach trees, which reduced formation of fruit-buds, had a similar effect on the composition of 1-year-old twigs sampled in September. The last 2 years' growth of a bearing Yellow Transparent apple tree was found to be slightly higher in moisture and total N, and lower in starch than similar twigs from non-bearing trees sampled in June and July. Ringing of 8-year-old McIntosh trees materially increased fruit-bud formation and the last 2 years' growth was lower in moisture, possibly slightly lower in total N, and higher in sugars and starch, in samples taken in late June and early July. The effects of the shading and ringing in increasing or decreasing fruit-bud formation are believed to be in accord with the relation of carbohydrates and N to growth and reproduction as outlined by Kraus and Kraybill.—G. F. Potter.

8045. KRAYBILL, H. R., G. F. POTTER, S. W. WENTWORTH, P. T. BLOOD, AND J. T. SULLIVAN. *Some chemical constituents of fruit spurs associated with blossom bud formation in the Baldwin apple.* New Hampshire Agric. Exp. Sta. Tech. Bull. 29. 3-41 + I-XIII. 20 fig. 1925.—No significant differences were found in content of sugars or phlorhizin, which could be associated with differences in fruit-bud formation. However, beginning in June and continuing through the remainder of the season, there were marked differences in content of starch, total carbohydrates, total N and P. The greatest fruit-bud formation occurred in the non-fruiting spurs from the cultivated trees which were medium in their content of carbohydrates and N. Non-fruiting spurs from the sod plot, containing more starch and less N, formed considerably smaller numbers of flower-buds. Fruiting spurs from the sod plot contained nearly the same relative proportions of N and carbohydrates as did the non-fruiting spurs from the cultivated plots, but in this case no flowers were formed. The writers believe that the data, so far as non-bearing spurs are concerned, are in accord with the theory proposed by Kraus and Kraybill, according to which most abundant formation of fruit-buds should occur when supplies of carbohydrates and nitrates are balanced. The presence of a fruit on the spur, however, appears to have a dominant effect repressing the formation of flower parts even though the chemical environment is satisfactory.—G. F. Potter.

8046. KUPHALDT, G. *Deutsche Gärtner in Russland.* [German gardeners in Russia.] *Gartenwelt* 29: 160-162, 174-175. 1925.—Horticulture first came into prominence after the reign of Peter the Great. For about 200 years Russia was a promising field for German gardeners. Names are given of a number of German gardeners and horticulturists who took an important part in the development of Russian horticulture and its seed trade.—J. C. Th. Uphof.

8047. LAY, CHARLES DOWNING. *A garden book for autumn and winter.* III + 303 p. Duffield & Company: New York, 1924.

8048. LEHENBAUER, P. A. *Acid phosphate for roses and carnations.* *Florists' Exchange* 55: 923. 1923.—In an experiment extending over 3 seasons, acid phosphate was shown to be a valuable stimulant to flower production. The phosphate was used at the rate of 40 pounds per 100 sq. feet of greenhouse bench. The average increase in yield each season from 4 varieties of roses was about 8%, and the corresponding increase with 2 varieties of carnations was about 5%.—F. F. Weinard.

8049. LOREE, R. E. *Pruning of small fruits.* Michigan Agric. Exp. Sta. Quart. Bull. 5: 63-65. 1922.

8050. MACDONALD, ALFRED. Planting home grounds; the beautifying of home grounds by the planting of trees, shrubs, plants and flowers suitable for southern and central Kansas and vicinity. *ix* + 93 p. Board of Park Commissioners: Wichita, Kansas, 1924.

8051. McDONALD, DONALD. Fruit culture and utility; a comprehensive and instructive companion for amateurs and young professionals. 288 p. *Illus. (part col.)* R. Hayes, Ltd.: 1924.

8052. McDOWELL, KENNETH. Lilies at Logan. *Gard. Chron.* [London] III, 78: 431. *Pl.* 177-178. 1925.—Notes and illustrations of *Lilium philippinense formosana* and *L. auratum*.—P. L. Ricker.

8053. MCFARLAND, J. HORACE. Roses and how to grow them. *ix* + 151 p. Doubleday, Page & Co.: Garden City, New York, 1924.

8054. MCFARLAND, J. H. The rose in America. Macmillan Co.: New York, 1923.

8055. McLAREN, JOHN. Gardening in California, landscape and flower. *xii* + 395 p. A. M. Robertson: San Francisco, 1924.

8056. MARSHALL, ROY E. Fertilizer trials with apples. *Michigan Agric. Exp. Sta. Quart. Bull.* 4: 87-90. 3 fig. 1922.

8057. MARSHALL, ROY E., AND W. C. DUTTON. Care of defoliated cherry orchards. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 61-63. 1 fig. 1922.—This is a discussion of the methods of pruning, fertilization, etc., necessary for cherry orchards nearly or quite defoliated by leaf-spot in mid-season. Rather severe pruning in late winter is advocated and a liberal use of nitrogenous fertilizers, with frequent cultivation till August. The trees should be sprayed to prevent recurrence of the trouble.—*Ernst A. Bessey*.

8058. MARTINEAU, ALICE. Gardening in sunny lands, the Riviera, California, Australia. 295 p. D. Appleton and Co.: New York, 1924.

8059. MARTINEAU, ALICE. The herbaceous garden. *xv* + 305 p. Williams & Norgate: London, 1923.

8060. MARTINEAU, ALICE. The secrets of many gardens. *xii* + 307 p. Williams & Norgate: London, 1924.

8061. MAXWELL, HERBERT. Flowers: a garden notebook; with suggestions for growing the choicest kinds. 264 p. Simpkin, Marshall & Co.: London, 1923.

8062. MEHLING. Die Behandlung der Reben und Weinberg Böden mit Schwefelkohlenstoff. [Treatment of the vine and vineyard soils with sulphur.] *Mittel. Deutsch. Landw. Ges.* 40: 561-563. 1925.

8063. MITCHELL, SYDNEY BANCROFT. Gardening in California: a guide for the amateur on the Pacific slope. *xii* + 323 p. Doubleday, Page & Co.: Garden City, New York, 1923.

8064. MORTON, JOHN WILLIAM. Commercial strawberry culture. 48 p. E. Benn: London, 1924.

8065. MORTON, JOHN WILLIAM. Profitable bush fruit culture. 63 p. E. Benn: London, 1925.

8066. NICHOLS, ROSE STANDISH. Spanish and Portuguese gardens. *xxxi* + 304 p. Houghton Mifflin Company: Boston and New York, 1924.

8067. NICHOLS, W. H. The propagation of our *Pterostylis*. *Victorian Nat.* 42: 187-191. 1 pl. 1925.—This paper sketches very briefly various cultural experiments on this orchid genus.—*Wm. Randolph Taylor*.

8068. NUTTALL, ZELIA. El cultivo de árboles frutales en Coyoacán a fines del siglo xviii. Cultivation of fruit trees in Coyoacan at the end of the 18th century.] *México Forest.* 3: 90-92. 1925.—Extracts from an inventory of 2 gardens show that apparently more attention was given to fruit growing in 1786 than recently. The lists include several kinds of apple, peach, plum, pear, and apricot; also quince, grape, orange, lemon, walnut, chestnut, aguacate, chayote, tejocote, clove, mulberry, cherry, fig, and olive.—*W. N. Sparhawk*.

8069. ORTLOFF, HENRY STUART. A garden bluebook of annuals and biennials. *xxii* + 245 p. Doubleday, Page & Co.: Garden City, New York, 1924.

8070. [PANGALO, K. I.] Пангалю, К. И. О Туркестанских дынях. [Turkestan melons]. (English summary.) *Труды Прикл. Бот. и Селекции.* [Bull. Appl. Bot. & Plantbreed.] 14²: 37-70. 5 fig. 1924-1925. [1925].—Melons used mostly for home consumption are

an important crop for Turkestan. Statistics as to the area, yield and value of the crop are given, and the method of cultivation is presented. Descriptions of wild and classification of cultivated melons are given. The author found that the cross between *Cucumis melo* and *C. trigonus* was 10% successful.—*M. Demerec.*

8071. [PASHKEVICH, V. V.] Пашкевич, В. В. Отношения между количествами цветков и завязавшихся и вполне созревших плодов на плодовых деревьях. [Relation of the number of flowers on the fruit trees to that of the fruits setting and the fruits matured.] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14³: 119-130. 1924-1925. [1925].—In 1919-1920 observations were made on a series of peach varieties, from which the following conclusions were drawn: (1) With an increase of the number of blossoms on a tree, the percentage of fruits setting diminishes; (2) the greater the total number of blossoms on a tree, the higher the percentage of matured fruits in relation to the fruits set. A list of poor-yielding and good-yielding varieties is given.—*M. Demerec.*

8072. [PASHKEVICH, V. V.] Пашкевич, В. В. Области и районы плодоводства в СССР. [The fruit growing regions and districts of U. S. S. R.] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14³: 3-43. 1 map. 1924-1925. [1925].—Fruit growing parts of Russia are divided into 13 regions; for each region climatic and soil conditions and types of fruits grown, are described.—*M. Demerec.*

8073. [PASHKEVICH, V. V.] Пашкевич, В. В. Опыт восстановления веса увядших плодов. [Withering of the fruits and restoration of their weight.] (English summary.) Труды Прикл. Бот. и Селекции. [Bull. Appl. Bot. & Plantbreed.] 14³: 131-136. 1924-1925. [1925].—Experiments have shown that fruits somewhat withered and, consequently, more or less diminished in weight, may to some extent recover weight when they are kept in a moist atmosphere, periodically watered, or even soaked in water for a short time. When kept in dry storage, it is useful to sprinkle them with water from time to time. The amount of withering and increase of weight varies among different varieties. Withering proceeds much more rapidly than absorption of water.—*Author's summary.*

8074. POTTER, G. F. Experiments on resistance of apple roots to lower temperatures. New Hampshire Agric. Exp. Sta. Tech. Bull. 27. 2-34. 2 fig. 1924.—It was found that the rate of thawing after exposure to a given temperature does not influence the amount of injury resulting. A long exposure to a given temperature slightly increased the injury resulting. Roots, dried until about 5% of the total moisture had been lost, suffered only $\frac{1}{2}$ as much injury as did turgid roots. A rapid drop in temperature was much more injurious than a slow fall to the same minimum. In soils containing different percentages of moisture the same amount of injury occurred if the final temperature reached was the same. This leads to the conclusion that greater root injury in dry soils under field conditions is due to the fact that they cool more rapidly. Scion roots from varieties considered to be relatively hardy were found on the average to be much harder than seedling roots. The scion roots of the Duchess and Hibernial variety were much more resistant to cold than those of any other.—*G. F. Potter.*

8075. POTTER, G. F. Orchard practice in New Hampshire. New Hampshire Agric. Exp. Sta. Ext. Bull. 21. 2-42 + I-V. 22 fig. 1924.—Methods of orchard practice are recommended on the basis of experience of New Hampshire fruit growers and of such experimental evidence as applies to conditions in the State.—*G. F. Potter.*

8076. PYLE, ROBERT. How to grow roses. 16th ed., rev. 189 p. Conard Pyle Co.: West Grove, Pennsylvania, 1925. (See also Bot. Absts. 12, Entry 4091.)

8077. READ, D. H. MOUTRAY. One garden: the intimate chronicle of its making. xii + 315 p. Williams and Norgate: London, 1923.

8078. REED, CHESTER A. Flower guide (revised and with new illustrations); wild flowers east of the Rockies. 228 p. Doubleday, Page & Co.: New York, 1922.

8079. REMONDINO, C. Coltura del Castagno ed Impiegodei suoi Prodotti. [Propagation of the chestnut and the utilization of its products.] Federazione pro Montibus Bul. 2. 1-71. 9 fig. Rome, 1923.—Chestnut propagation and management are described from an orchard standpoint, the chief product being the nut. The methods of grafting, cultivation and management are outlined, as are methods of harvesting and preparing various products from the nuts.—*E. N. Munns.*

8080. ROHDE, ELEANOR SINCLAIR. The old English gardening books. 144 p. *Illustrated*. M. Hopkinson & Co.: London, 1924.

8081. ROWLES, WILLIAM F. Greenhouses; how to make and manage them. *xi-xvi + 108 p.* C. Arthur Pearson Ltd.: London, 1924.

8082. SAMPSON, HUGH CHARLES. The coconut palm; the science and practice of coconut cultivation. *xiv + 262 p.* J. Bale, Sons & Danielsson, Ltd.: London, 1923.

8083. SANDERS, THOMAS WILLIAM. Annual flowers for garden & greenhouse, including hardy & half-hardy biennials. 148 p. W. H. & L. Collingridge: London, [1924?].

8084. SANDERS, THOMAS WILLIAM. Grapes; peaches; melons; and how to grow them. A handbook dealing with their history, culture, management and propagation. (15) + 150 p., 3 pl. W. H. & L. Collingridge: London, [1924].

8085. SCHERMERHORN, L. G. Report of the Vegetable Department. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 77-86. 1924 [1925].—In a fertilizer triangle test with sweet corn, highest yield was obtained with a 4-10-2 mixture.—In a fertilizer study with sweet potatoes, highest yields followed an application of 1400 pounds of a 3-8-8 mixture. KCl was more efficient than K_2SO_4 . In a 2nd test, increasing the potash from 0% to 8% resulted in a total yield increase of 85 bushels per acre. In a comparison of N sources, highest yields resulted from the use of a mixture of $\frac{1}{2}$ $NaNO_3$ and $\frac{1}{2}$ $(NH_4)_2SO_4$.—In fertilizer tests with asparagus, best yields followed an application of 10 tons of manure plus 500 pounds of a 4-8-4 fertilizer in the spring, with an additional application of 1500 pounds of the fertilizer mixture after cutting. In the 2nd test, best results followed an application of 10 tons of manure in the spring with 15000 pounds of a 4-8-4 after cutting.—First picking of muskmelons from plants grown in veneer bands was made on Aug. 3 as compared with Aug. 17, for field-grown plants. In fertilizer tests with muskmelons, best yields were obtained where no manure was used but a cover crop of rye turned under and commercial fertilizer applied.—In fertilizer tests with sweet corn, highest yields were obtained where 200 pounds of acid phosphate, 100 of KCl, and 50 of $NaNO_3$ were applied at time of planting, and the same mixture as a side dressing. In a similar test with tomatoes and peppers, highest yields resulted where $\frac{1}{2}$ of the fertilizer was applied at time of planting the crop and the remainder as a side dressing.—*Wm. H. Martin.*

8086. SCHNEIDER, CAMILLO. A selection of American and Asiatic willows. Gard. Chron. [London] III. 77: 204-5, 282, 292, 306, 397-8. 1925.—This paper presents notes on a study of American willows, and suggests those desirable for cultivation.—*P. L. Ricker.*

8087. SCHNEIDER, JOSEF. Calmugrove orechy. [Histology of Chaulmoogra nuts (*Taractogenos Kurzii* King).] Zvl. ot. Vestn. Kr. ces. Spol. Nauk. Tr. 2: 1-15. 1 fig. 1924.

8088. SET, G. B. Art of grafting in India. *ii + 74 p.* Ivy Nursery Gardens: Calcutta, 1920.

8089. SHELTON, LOUISE. Beautiful gardens in America. Rev. ed., *xviii + 560 p.* C. Scribner's Sons: New York, 1924.

8090. SHRIVELL, F. W. E., AND BERNARD DYER. The manuring of market garden crops. New ed., 148 p. G. Street & Co.: London, 1924.

8091. SICARD, H. Expériences de fumure de la vigne. [Fertilization of vineyards.] Prog. Agric. et Vitic. 75: 522-524, 550-553. 1921.—Applications of N, K and P in different forms were made to 2 vineyards, 20 plots being laid out in each. This report covers 1 year of work.—*E. L. Proebsting.*

8092. THOMAS, HARRY HIGGOTT. Cassell's guide to gardening. *ix + 276 p.* Cassell & Co.: London, New York, 1923.

8093. THOMAS, H. H. The complete amateur gardener. 13 p. London, 1924.

8094. TINLEY, GEORGE F. Colour planning of the garden. *xxv + 288 p.* T. C. & E. C. Jack: London and Edinburgh, 1924.

8095. TOWNSEND, REGINALD TOWNSEND. The book of gardens and gardening. 106 p. Doubleday, Page & Co.: Garden City, New York, 1924.

8096. TUKEY, H. B. The pear in New York. New York [Geneva] Agric. Exp. Sta. Bull. 495. 1-19. 1 pl. 1922.—The approved methods for growing pears in New York State are described, the history of the pear as a cultivated fruit is briefly traced, and the distribution of the pear in New York given; 21 varieties are discussed with reference to their characteristics

and value under New York conditions. The principal diseases and insect pests of pears are described and control measures recommended.—*F. C. Stewart.*

8097. UNITED FRUIT COMPANY. The story of the banana. 53 p. United Fruit Company: Boston, Massachusetts, 1921.

8098. UTERMARK, W. L. De economische beteekenis van het geslacht Citrus, in het bijzonder voor de Nederlandsche overzeesche gewesten. [Economic importance of citrus, especially in the Dutch Colonies.] 212 p. Het Instituut: Amsterdam, 1923.

8099. VACHEROT, JULES. Parcs et jardins, album d'études précédées de le 2^e édition de. "Les parcs et jardins au commencement du xx^e siècle." [Parks and gardens. Introductory volume to the 2nd edition of: "The parks and gardens at the beginning of the 20th century."] ii + 139 p. 126 + 3 pl., 402 fig. O. Doin: Paris, 1925.

8100. [VORONOV, IŮ N.] Воронов, Ю. Н. Материалы к познанию диких груш (Pyrus s. str.) Кавказского края. [Materials for the knowledge of the wild pears (Pyrus s. str.) in the Caucasus.] (English summary.) Труды Прикл. Бот. и Селекции [Bull. Appl. Bot. & Plantbreed.] 14³: 73-90. 2 fig. 1924-1925. [1925].—This work was based on the study of material in the herbarium, Leningrad. In Caucasus, 4 species of pears are found: *Pyrus communis* L., *P. elaeagrifolia* Pall., *P. salicifolia* Pall., *P. syriaca* Boiss. Three new species, *P. taochia*, *P. raddeana* and *P. oxyprion*, are described by the author.—*M. Demerec.*

8101. [VORONOV, IŮ N.] Воронов, Ю. Н. Дикорастущие родичи плодовых деревьев и кустарников Кавказского края и Передней Азии. [Wild growing progenitors of fruit trees of the Caucasus and Western Asia.] (English summary.) Труды Прикл. Бот. и Селекция [Bull. Appl. Bot. & Plantbreed.] 14³: 44-72. 1924-1925. [1925].—Data are given on the geographical distribution of wild growing fruit species in Caucasus and Western Asia. It is pointed out that Caucasus, Asia Minor and Persia are very rich in species belonging to the groups of Pomoidae and Prunoideae, especially of *Pyrus*, *Sorbus*, *Prunus*, *Cerasus* and *Amygdalus*. These countries may be thought of as a treasury, showing immense riches of almost unexplored pomological material.—*M. Demerec.*

8102. WATTS, RALPH LEVI. Growing vegetables. 154 p. Harper & Bros.: New York and London, 1923.

8103. WHEELER, HOMER JAY. Citrus culture in Florida. 154 p. The American Agricultural Chemical Company: Jacksonville, Florida, 1923.

8104. WHITE, T. H. Control of splitting in carnations. Florists' Exchange 59: 517. 1925.—It is suggested that splitting of the calyx, which comes from multiplication of petals, is hereditary, and might be reduced by careful selection of cuttings from plants that produce no split blooms.—*F. F. Weinard.*

8105. WHITE, T. H. Violets and light control. Florists' Exchange 58: 394, 407. 1924.—The effects of varying the length of day were determined in a practical way with violets. The most noticeable effect of shortening the day was the checking of the growth of the leaves. It was concluded that nothing would be gained by reducing the daylight in midwinter, but if the daylight could be reduced to 10 hours when the days lengthened, the blooming period could be extended into early summer. Electric light would probably be useful in midwinter to stimulate foliage growth.—*F. F. Weinard.*

8106. WICKENS, GEO. W. Varieties of apple trees suitable for commercial orchards in Western Australia. Jour. Dept. Agric. Western Australia, 2nd ser. 2: 507-508. 1925.—For commercial planting the following are recommended: Jonathan, Cleopatra, Dunn's Favourite, Granny Smith, Yates, and Tasma. The 1st 4 are the main varieties for export to the London and European markets, and the last 2, which are somewhat late in ripening, are suited to the Singapore and Java trade.—*P. J. Olson.*

8107. WILDER, LOUISE BEEBE. Adventures in my garden and rock garden. xii + 355 p. Doubleday, Page & Co.: Garden City, New York, 1923.

8108. WISCONSIN STATE HORTICULTURAL SOCIETY. The Wisconsin garden book. 55 p. Wisconsin State Hort. Soc.: Madison, 1922.

8109. WOLLEY-DOD, ANTHONY HURT. The roses of Britain. (Detailed descriptions of the wild roses known to grow in the British Islands, with notes on their peculiarities and affinities, and on their comital distribution.) 112 p. 1 pl. Taylor and Francis: London, 1924.

8110. WOOLLEY, R. V. GIFFARD. *Roses and how to excel with them.* 119 p. Country Life: London, 1923.

8111. WRIGHT, MABEL OSGOOD. *How to save the wild flowers.* Amer. Fern. Jour. 13: 52-55. 1923.—The transplanting of wild plants in general and the Mountain Laurel and Rhododendron in particular.—*E. R. Walker.*

MORPHOLOGY AND ANATOMY OF VASCULAR PLANTS

ARTHUR J. EAMES, *Editor*

(See also in this issue Entries 5815, 5853, 6027, 6475, 6604, 6684, 6766, 6822, 6850, 6880, 6984, 7083, 7102, 7376, 7387, 7519, 7555, 7557, 7562, 7724, 7743, 8859, 9054, 9128, 9384, 9411, 9425, 9437, 9537, 9636)

8112. ANTONIEWICZ, J. *Contributions à l'étude de la morphologie de la feuille pennée.* [Contributions to the study of the compound leaf.] Bull. Acad. Sci. Cracovie 3-4 B: 403-422. 2 pl. 1925.

8113. AUGULIARO, PAOLINA. *Ricerche sulla macrobiocarpia della Gardenia Thunbergii L. fil.* ["Macrobiocarp" in *G. Thunbergii*.] Bull. Orto Bot. R. Univ. Napoli. 7: 237-254. 7 pl. 1924.—*Gardenia Thunbergii* possesses the remarkable quality of retaining its fruit for an indeterminate number of years, the fruit meanwhile slowly maturing and increasing in size. For 7 months after flowering no changes in form or size are noticeable. Development of the ovule is arrested. After fertilization the oosphere remains unsegmented for about 10 months. Embryo formation precedes endosperm development. In 2 years the embryo acquires full size and definite structure, and is able to germinate. The protracted stay of the fruit on the branch, even after the seed are mature, recalls the phenomenon which Delpino called "macrobiocarp." This condition is doubtless related to the climatic conditions of the place of origin, Cape of Good Hope, of this plant. Plants of the Australian desert regions often show macrobiocarp. The histological structure of the ovary and its development are discussed in detail.—*From author's abstract (transl.).*

8114. ARBER, AGNES. *Monocotyledons—a morphological study.* 232 p. 159 fig. Cambridge Univ. Press, 1925.

8115. ARTSCHWAGER, ERNST. *Anatomy of the vegetative organs of sugar cane.* Jour. Agric. Res. 30: 197-221. 1925.—An illustrated account of the structure and development of sugar cane with special reference to the various types of bundles in node and internode and in leaf.—*Author.*

8116. BALLARD, C. W. *The elements of vegetable histology.* xiv + 246 p. 75 fig. John Wiley and Sons, Inc.: New York; Chapman and Hall Ltd.: London, 1921.

8117. BEAURIEUX, R. *Observations anatomiques et physiologiques sur le Crinum capense Herb.* [Anatomical and physiological observations on *Crinum capense* Herb.] Mém. Soc. Roy. Sci. Liège III. 11⁴: 1-41. 1914. [1921.]

8118. BECQUEREL, PAUL. (Translation by T. EPALZA.) *Descubrimiento de la "Phyllorhiza."* Sus consecuencias para la morfología y la biología de las plantas vasculares. [Discovery of the phyllorhiza.] España Forest. 8: 28-32, 57-59. 20 fig. 1922.—This is a description of Chauveaud's ontogenetic studies on ferns, monocotyledons and dicotyledons. According to Chauveaud, the phyllorhiza is an elemental plantule consisting of a leaf and a root, derived from the meristem of the ovum through the multiplication of 2 initial cells formed at the poles of the undifferentiated embryonic sphere. The rest of the meristem gives rise to an initial bud, which develops into a 2nd phyllorhiza. The process may be repeated indefinitely, giving rise, as the phyllorhizas become differentiated, to vascular plants. In cryptogams and monocotyledons each phyllorhiza has a single vascular system, all of which combined make up the vascular system of the plant. A dicotyledon, having a double vascular system, is evidently a double plantule with a single stem. The necessity for providing a vascular system for each new element as the plant grows leads to the formation of annual layers of new stem tissue. (Paper unfinished, owing to suspension of publication.)—*W. N. Sparhawk.*

8119. BEGHTEL, FLOYD E. The embryogeny of *Pastinaca sativa*. Amer. Jour. Botany 12: 327-337. 2 pl. 1925.—Four ovules begin development, of which only 2 persist. The female archesporium consists of 3-7 cells. The author cites many reports of multicellular archesporium through a wide range of angiosperm orders and suggests that this character is therefore of little phylogenetic importance. But 1 megaspore mother-cell develops. It is invariably the outer megaspore which functions. Only 1 embryo sac matures and it is typically 8-nucleate. A single thick, fleshy integument is produced.—E. W. Sinnott.

8120. BOOSFELD, ALBERT. Beiträge zur vergleichenden Anatomie stammsukkulenter Pflanzen. [Contributions to the comparative anatomy of plants with succulent stems.] (Diss. Frankfurt, 1920.) 43 p. Gustav Fock; Leipzig, 1922.

8121. BOWER, F. O. Size a factor in the morphology of tissues. Flora 118-119: 47-61. 5 fig. 1925.—The maintenance of an effective ratio between bulk and surface which will permit physiological interchange, is generally recognized as a principle in the external morphology of plants, for example, elongations of submerged plants. The author applies this principle to the stele and discusses the method of solution of this problem when primary tissues only are involved, notably in the Pteridophytes. An increase in surface which in some measure keeps pace with the increase in bulk may be brought about by the development of ridges or of involutions of the surface of the stele. This is seen in comparing the stems of *Ankryopteris grayi* and *Asterochlaena laza* with that of *Botryopteris cylindrica*. The polycycly of living ferns (*Paesia podophylla*, *Thyrsopteris*, *Saccoloma*, *Matonia*) may be interpreted as a response to this principle. In the roots of certain palms (*Areca*, *Verschaffeltia splendida*) the increase in size of the root is associated with a disintegration of the stele. A table is given showing for a large number of fossil stems the relation between diameter of stele and modifications which increase surface. The same principle is applicable to the changes in shape of stele in ontogeny, and also to changes in shape of xylem (*Tmesipteris lanceolata*, *Psilotum triquetrum*, *Lycopodium scariosum* var. *Jussiaei*). The question is raised as to what extent the modifications of conducting tracts which are imposed by physical laws can be used to determine affinity, for example, "How far can polycycly in ferns be used as a sign of affinity?" Caution is advised in the use as evidence of relationship of such characters as "the stellate stele, medullation, stelar decentralization and disintegration, so far as they may be proved to be the results of such increasing size as may appear in any primitive but enlarging organism."—A. G. Stokey.

8122. BRENNER, W. Zur Kenntnis der Blütenentwicklung einiger Juncaceen. [Floral development of certain Juncaceae.] Acta Soc. Sci. Fennica 50*: 1-27. 1 pl., 41 fig. 1922.—This study deals chiefly with the development of the embryo-sac and endosperm of *Juncus* and *Luzula*, comparison is made with the South American *Distichia muscoides*.—In stamen development nothing noteworthy is shown. The tapetum disappears without formation of a "periplasmodium." The embryo sac is of normal type (palm)—the basal tetrad cell becomes the sac. Fertilization was difficult to observe. The pollen tube in *Luzula* passes through an obturator. The synergids are ephemeral but the small antipodals endure, though without division. The endosperm is formed as partly central and partly basal. In the central endosperm, walls form tardily. In *Juncus* in basal endosperm formation there is a small cell with a distinct membrane within which several free nuclear divisions occur. In *Luzula* the basal endosperm has no distinct membrane but becomes a large mass, first tubular, then solid, and contains many free nuclei. Later, this is absorbed, leaving no trace. In *Luzula* especially, the embryo is formed tardily.—*Distichia muscoides* seems closely related to *Juncus*, and certainly belongs in the Juncaceae.—Author (transl.).

8123. BRIQUET, J. Carpologie du *Peucedanum palustre*. [Carpology of *P. palustre*.] Comp. Rend. Soc. Phys. Hist. Nat. Genève 40: 99-100. 1923.

8124. BRIQUET, J. L'androécée des Carduées à filets unis. [The androecium of the Cardueae with united filaments.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 39: 63. 1922.

8125. BRIQUET, J. Sur l'organisation du fruit du *Crithmum maritimum* L. [Structure of the fruit of *C. maritimum*.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 40: 115-121. 1923.

8126. BROWNE, ISABEL. The structure of the rhizome of *Equisetum giganteum*. Bot. Gaz. 80: 48-62. 3 fig. 1925.—The structure of a rhizome of *Equisetum giganteum* is given

in detail, describing nodal structure, development of root-bearing branches, and increase in bundles. There is no common endodermis, each bundle having a special sheath. All tracheids are reticularly thickened. Protoxylem is discontinuous at the nodes, at which points the wood is less developed than in the aerial stem, and contains tracheid-shaped parenchymatous cells which retain their contents. The xylem shows differentiation below the 1st diaphragm of the branch. Each branch has 2 opposite roots, apparently of equal age. Because of the maturity of the internodal portions it was impossible to determine if the development of the metaxylem is centrifugal or centripetal.—*C. F. Williams.*

8127. BRUGGEMANN, C. Schirmförmige Krone der Pinie, *Pinus pinea*. [Umbrella-like crown of *P. pinea*.] *Mitteil. Deutsch. Dendrol. Mes.* 35: 333-334. 1 *pl.* 1925.

8128. BUGNON, P. La théorie du polymorphisme carpellaire et la cas de légumineuses. [The theory of carpellary polymorphism and the case of the Leguminosae.] *Bull. Soc. Bot. France* 72: 831-834. 1925.—According to Edith R. Saunders, the gynoeceum of the Leguminosae is generally made up of 2 carpels but sometimes of 10, 12 and even more. However, according to the author, Saunders is wrong. Her theory is founded essentially upon character of mature gynoeceum (venation and dehiscence) and does not take account of ontogeny or of comparative foliar morphology. Its application to other families is no more justified.—*A. Tronchet (transl.).*

8129. BUGNON, P. La dichotomie cotylédonaire, caractère ancestral. [Cotyledonary dichotomy, ancestral characteristics.] *Bull. Soc. Bot. France* 72: 1088-1094. 7 *fig.* 1925.—The author considers as very improbable the opinion of A. Arber, according to which cotyledonary dichotomy is only "the mechanical result" of a particular method of juncture between conducting elements of cotyledons and root. If the relative disposition of the conducting elements of radicle and cotyledon is taken as the cause of the first bifurcation, it seems beside the point to attempt to make this explain a new dichotomy of the two primitive lobes, especially since the juncture is only made by the median bundle of cotyledons, a bundle located in the central region. On the other hand, the interpretation of A. Arber could only be accepted if the mode of dichotomous branching were, in the Spermatophytes, exclusively reserved to the cotyledonary leaves. This is not the case. In the Moraceae ("Ficaire"), for example, the dichotomy of the cotyledon appears exactly comparable to that of many bracts. The author describes several examples of leaves presenting dichotomous branching, and presents the hypothesis that the tendency to dichotomy is atavistic. The oldest type of branching among the vascular plants remains the rule, then, for leaves of Gymnosperms and is also found among the Angiosperms. The tendency of embryonic and floral leaves is thus to revert to ancestral characteristics.—*A. Tronchet (transl.).*

8130. CEJP, KAREL. Beitrag zur vergleichenden Morphologie der dimerischen Blüten. [Comparative morphology of dimerous flowers.] *Beiträge Bot. Centralbl.* 41¹: 128-164. (1924).—The author notes the variations in the crucifer flower diagrams and tries to determine the fundamental diagram accurately. The 1st chapter concerns the history of studies upon crucifers, the 2nd teratology, and the 3rd discusses analogous conditions in the Oleaceae.—(*From abst. in Preslia (transl.).*)

8131. CEJP, KAREL. Příspěvek k srovnávací morfologii dimerických květů. [Contribution to the comparative morphology of dimerous flowers.] *Publ. Facultat. Sci. Univ. Charles* No. 14. 1-15. 1924.—The author has found in virecent flowers of *Turritis glabra* not only proof of *dédoublement* in the crucifers, but an explanation of the floral diagram of this family. The phylogenetic development of the crucifers is discussed. This family is modern, its development dating from the present epoch for the following reasons: exclusive presence of herbaceous types, division of the family into a great number of genera and species, and absence of isolated types, for the more time a certain type has had for development the more its characters become distinct and fixed.—*From abst. in Preslia (transl.).*

8132. CORRINGTON, LEAFY J. Ascomycetes of Ohio. V. The Peltigeraceae. *Ohio Biol. Surv. Bull.* 2: 354-364. 1921.

8133. DOMIN, K. Dichotomy and chorisis. A morphological study. *Bull. Internat. Acad. Sci. Bohême* 1923: 1-10. 1 *fig.* 1923.

8134. DOMIN, K. Příspěvky k morfologii a tératologii rostlin. [Contributions to the mor-

phology and teratology of plants.] *Traites de la II^e Cl. Acad. Sci. Bohême* II, 32¹⁸: 1-13. 4 fig. 1923.—There are 10 independent chapters: (1) coleophyly in *Ranunculus bulbosus*; (2) gynodimorphic flowers of *Ranunculus polyanthemus*; (3) observations on the seedlings of *Pinus sylvestris*; (4) development of leaves of *Sambucus nigra*; (5) heterophyly in *Salvinia glutinosa*; (6) development of leaves of *Ononis spinosa*; (7) *Potentilla arenaria*, forma or mutant *monophylla*; (8) an ecological form of *Thymus ovatus*; (9) fusion of axes in *Ficaria verna*, and (10) a simple sympodium in *Capsella bursa-pastoris*.—*From abst. in Preslia (transl.)*.

8135. E[VANS], A. W. [Rev. of: MEYER, F. J. *Das trophische Parenchym, A, Assimilationsgewebe*. (The trophic parenchyma, A, assimilation tissue.) viii + 85 p., 35 fig. Gebrüder Borntraeger: Berlin, 1923.] *Amer. Jour. Sci.* 7: 435. 1924.—A short note on the contents of the book.—*T. J. Fitzpatrick*.

8136. FILLA, FRANZ. *Das Perikarp der Proteaceae*. [The pericarp of the Proteaceae.] *Flora* 120: 99-142. 70 fig. 1925.—There are 8 types of pericarp in the Proteaceae: (1) pericarp consisting of stone cells only (*Conospermum*, *Petrophila*, *Protea*); (2) endocarp of stone cells, exocarp of soft parenchyma (*Persoonia*, *Cenarrhenes*); (3) an aberrant type with endocarp of crystal-bearing palisade, exocarp of parenchyma (*Leucadendron*, *Serruria*, *Nivenia*, *Spatalla*, et al.); (4) exocarp with clusters of radially elongated stone cells (most of the Grevilleae); (5) hard woody pericarp with numerous fibro-vascular bundles running longitudinally (*Banksia*, *Dryandra*); (6) pericarp of soft parenchyma with longitudinal fibro-vascular bundles of the inner endocarp branching radially (*Xylomelum*, *Brabeium*, *Macadamia*, *Guevina*); (7) soft endocarp, mesocarp with vascular strands which have fascicular cambium and thick strands of sclerenchyma, exocarp with scattered stone cells (*Embothrium*, *Stenocarpus*); (8) *Hakea* type in which there is typical secondary growth with phellogen, lenticels, fascicular and interfascicular cambium. There is a discussion of the relation of the types to climatic and edaphic factors.—*A. G. Stoekey*.

8137. FISHER, ROBERT. *Über das schraubenförmige Aufreissen der Wurzelhaarmembran bei Anthurium*. [The spiral breaks in the root hair membrane of *Anthurium*.] *Oesterreich. Bot. Zeitschr.* 1921⁹⁻¹²: 249-254. 1921.

8138. FREY, ALBERT. *Geometrische Symmetriebetrachtung*. [Geometrical symmetry.] *Flora* 120: 87-98. 10 fig. 1925.—The author discusses symmetry which is not related to planes but based on rhythmic repetition of uniform elements. This interpretation of symmetry includes 3 primary types in which a superposition of like elements can be produced by (a) parallel sliding of elements; (b) rotation (whorls etc.); (c) mirror reflection (opposite leaves, etc.) Three other types can be produced by combinations of the primary types (spiral movement which is a combination of parallel sliding and rotation, etc.). The symmetry of the flower is discussed from the point of view of the symmetry of the calyx, corolla, androecium and gynoecium, rather than of the flower as a whole. A set of symbols is given by means of which symmetry can be included in the floral formula.—*A. G. Stoekey*.

8139. FUENTES M., FRANCISCO. *Teratologia vegetal: Algunos ejemplares teratológicos de plantas conservados en el Museo Nacional de Santiago de Chile*. [Vegetal teratology: Some teratological specimens of plants preserved in the National Museum at Santiago, Chile.] *Rev. Chilena Hist. Natur.* 28: 58-66. 1924.—Teratological specimens of 36 species of flowering plants, belonging to many families, are briefly noted; some of these are carefully described and nearly all bear data of occurrence.—*F. W. Pennell*.

8140. FUNAOKA, SEIGO. *Der anatomische Bau des Blattes des Bastardes Mirabilis jalapa L. × Mirabilis longiflora L., verglichen mit den Elternpflanzen*. [Anatomical structure of the leaves of the hybrid *M. jalapa* × *M. longiflora* compared to the parental plants.] *Zeitschr. Indukt. Abstamm.- u. Vererb.* 39: 288-292. 1925.—The hybrid resembles the *M. longiflora* parent with regard to gland and rapaid cells, the *M. jalapa* parent with regard to intercellular spaces, and both parents in form of margins of epidermal cells and thickness of glandular hairs on leaf margins. The hybrid is intermediate in density of pubescence, number of stomates and size of stomates. It exceeds both parents in size of epidermal cells and number of cells in the glandular hairs, but does not equal either parent in size of palisade cells. The author concludes that the structure of the leaf is the net result of a large number of hereditary factors affecting specifically its various tissues.—*P. C. Mangelsdorf*.

8141. GATES, FRANK C., AND C. O. ERLANSON. Enlarged bases in *Fraxinus nigra* in Michigan. Bot. Gaz. 80: 107-110. 2 fig. 1925.—Description of specimens growing along streams showing enlarged bases similar to those characterizing the gums and cypress of southern swamps (U. S. A.). Histological examination showed the excessive diameter of the bases to be due to the formation of twice as much summer wood in the growth layers as was found in the trunk immediately above.—B. W. Wells.

8142. GATES, R. R., AND W. R. IVIMEY COOK. Virescence in *Delphinium*. New Phytol. 24: 172-179. 4 pl. 1925.—A virescent inflorescence of *Delphinium* is described and illustrated. Comparisons are made with other records of virescence and peloria. The same teratological condition may appear as the result of a germinal change or as an externally impressed modification.—I. F. Lewis.

8143. GEROME, J. Monstruosities florales. Jour. Soc. Nat. Hort. France 26: 159-161. 1925.—The writer gives examples of peculiar inflorescences in *Primula obconica*, *Cyclamen persicum* and species of *Catleya*.—H. C. Thompson.

8144. GIGOUX, ENRIQUE ERNESTO. Calandrinia discolor: Un caso de exuberante lozania. [C. discolor: a case of exuberant luxuriance.] Rev. Chilena Hist. Natur. 29: 191, 192. 1925.—A description is given of a remarkably large plant of *Calandrinia discolor*, found near Caldera, Chile, after heavy rains in 1914.—F. W. Pennell.

8145. GOEBEL, K. Botanische Abhandlungen. Heft. 1: Gesetzmässigkeiten im Blatt-aufbau. [Structural regularity in leaf development. Venation and stomatal arrangement.] 78 p. Gustav Fischer: Jena, 1922.

8146. GOEBEL, K. Organographie der Pflanzen, insbesondere der Archegoniaten und Samenpflanze. Zweite umgearbeitete Auflage. 3 Teil. Spezielle Organographie der Samenpflanzen. [Organography of plants, especially of the archegoniates and seed plants. Second revised edition. Part III. Special organography of seed plants.] G. Fischer: Jena, 1923.

8147. GRÉGOIRE, V. L'organogénèse de l'ovaire et la déhiscence du fruit. [Development of the ovary and dehiscence of the fruit.] Bull. Soc. Roy. Bot. Belgique 2^e Série 56: 134-143. 7 fig. 1924.

8148. GRIFFIN, GERTRUDE J. Further note on the position of the tori in bordered pits in relation to penetration of preservatives. Jour. Forest. 22: 82-83, (663-664). 1924.

8149. GROSSBARD. Développement du pistil chez l'Urticée *Girardinia zeylanica* Dcne. [Development of the pistil of *Girardinia zeylanica* Dcne.] Bull. Acad. Sci. Cracovie 5-6 B: 437-443. 1 pl. 1924 [1925].

8150. GROSSBARD. La variabilité du pistil de l'Urticée *Girardinia zeylanica* Dcne. [Variability of the pistil of *Girardinia zeylanica*. (With French résumé.)] Bull. Acad. Sci. Cracovie 1-2 B: 123-134. 1 pl. 1924 [1925].

8151. GUNCKEL L., HUGO. Algunos observaciones sobre la histologie del litre. [Observations on the histology of "litre."] Rev. Chilena Hist. Nat. 27: 64-71. 6 fig. 1923.—After an enumeration of common names, a scientific synonymy and a quoted generic description, a description is given of *Litrea caustica* (Molina) Miers and a detailed histological study of its leaf.—F. W. Pennell.

8152. HAUMAN, LUCIEN. Sobre una supuesta "Heterocarpia" de "*Tragia volubilis*" L. [A supposed case of "heterocarpia" in *T. volubilis*.] Physis 5: 304.—1922.

8153. HAYAKAWA, KANGO. Morphological studies of sugar cane. Part IV: Root. Dept. Agric. Govt. Res. Inst. Formosa Rept. 7. 1-14. 7 pl. 1923.

8154. HEITZMAN, W. Ein Betrag zur Kenntnis der anatomischen Verhältnisse im Bau von *Cyclamen persicum* Mill. [A contribution to the knowledge of the anatomical relations and structure of *C. persicum*.] Bull. Acad. Sci. Cracovie 1-2 B: 69-73. 2 fig. 1924.

8155. HERRE. Verschiedenheit in Wuchs und Holzstruktur bei den beiden Geschlechtern dioecischer Gehölze. [Variability in growth and wood structure of both sexes of dioecious woody plants.] Mitteil. Deutsch. Dendrol. Ges. 35: 344. 1925.—Instances are cited of staminate trees which grow more vigorously and to a greater height than do pistillate trees; they are more readily grafted.—J. C. Th. Uphof.

8156. HERSZLIK, A. Les tanifères de quelques variétés du haricot (*Phaseolus multiflorus*). [Tannin-bearing cells of some varieties of kidney-bean.] Bull. Acad. Sci. Cracovie 3-4 B: 125-129. 1 pl. 1924.

8157. HIRMER, MAX. Zur Lösung des Problems der Blattstellungen. [The problem of leaf-arrangement.] 109 p. Gustav Fischer: Jena, 1922.

8158. HOLM, THEO. *Chelone glabra* L., a morphological study. Amer. Jour. Sci 6: 265-270. 5 fig. 1923.—*Chelone* is a genus comprising 4 perennial herbs, natives of northern America. *C. glabra* reproduces vegetatively from stoloniferous rhizomes and from seed. Insects perforate the base of the corolla in order to reach the honey. Apparently, a fly enters the corolla perforated by the bee and performs pollination. The morphology and structure of the roots, rhizomes, stem, and leaf are given.—*T. J. Fitzpatrick.*

8159. HOLM, THEO. *Chenopodium ambrosioides* L., a morphological study. Amer. Jour. Sci. 6: 157-167. 3 fig. 1923.—This is a general history of the genus and of this species which is an annual in its northern range and a perennial in its southern. It is followed by an account of the internal structure of the vegetative organs.—*T. J. Fitzpatrick.*

8160. HOLM, THEO. *Gratiola* L., and *Sophronanthe* Benth., a morphological study. Amer. Jour. Sci. 7: 132-140. 9 fig. 1924.—The botanical history of the genera, *Gratiola* and *Sophronanthe*, is given, also the morphology of *G. virginiana*, *G. viscosa* and *G. pilosa*, together with the internal structure of the roots, stems, and leaves. A study of the available material shows that from an anatomical point of view *Gratiola* and *Sophronanthe* are very distinct. In order to reach a final decision it is necessary to make a study of fresh material of *G. subulata* and *S. hispida*.—*T. J. Fitzpatrick.*

8161. HOLM, THEO. *Ilysanthes*, *Schrophularia* and *Linaria*, a morphological study. Amer. Jour. Sci. 8: 395-410. 5 fig. 1924.—This is a short account of the structure of *Ilysanthes dubia*. There is a more extended study of *Schrophularia nodosa* L. var. *americana* Michx., followed by a similar record of *Linaria canadensis* (L.) Dumont, and of *L. elatine* (L.) Mill.—*T. J. Fitzpatrick.*

8162. HOLM, THEO. *Polypremum procumbens* L., a morphological study. Amer. Jour. Sci. 7: 210-218. 10 fig. 1924.—The morphological and internal structure of the root-system, stem, and leaf are described. The short, narrow leaves have a relatively small assimilating surface compared with size of plant. The stem has a stomatiferous epidermis and a cortex of palisade cells. The mechanical tissue is represented by stereome. The plant is heliophilous.—*T. J. Fitzpatrick.*

8163. HÖSTERMANN, G. Teratologische Erscheinungen an *Corylus*blüten. [Teratology of *Corylus* flowers.] Mitteil. Deutsch. Dendrol. Ges. 35: 289-290. 1 pl. 1925.—Androgyny with male and female flowers on female inflorescences is described; also a female inflorescence with 110 pistils.—*J. C. Th. Uphof.*

8164. JESWIET, J. Beschrijving der soorten van het Suikerriet 12^e Bijdrage. De bloei bij het geslacht *Saccharum*. [Description of sugar cane varieties. 12th contribution. Flowering in *Saccharum*.] Arch. Suikerindus. Nederland-Indië, Meded. Proefsta. Java-Suikerindus. 1925¹³: 405-441. 13 fig. 1925.

8165. JOST, L. Über schlafenden Knospen. [Dormant buds.] Flora 118-119: 289-299. 13 fig. 1925.—A study is made of the continuity of the conducting system between dormant buds and main stem. The question as to how stems which bear dormant buds increase in length was also studied and an intercalary growth determined. The similarity of growth of short stems bearing dormant buds and that of short shoots of pine is pointed out. Quotations from Hartig on the problem of origin and growth of dormant buds are given and a substantial agreement of his earlier observations and results of Jost's careful morphological studies, noted.—*O. L. Clark.*

8166. KAMENICKÝ, KAREL. Ontogenie pyren u rodu *Prunus*. Veda Prirodni 1924: 159-163. 1 fig. 1924.—The author has studied the early stages of the development of the stone in the fruit of *Prunus cerasus*, *P. avium*, *B. insititia*, and *P. domestica*. The stones in these species develop similarly.—*From abst. in Preslia (transl.).*

8167. KANNGIESER, F. Zur Metamorphose der Pflanzen. [Metamorphosis of plants.] Mitteil. Deutsch. Dendrol. Ges. 35: 321. 1925.—Pine twigs, distorted by the attacks of a gall-wasp, give evidence that the cone scales are metamorphosed leaves.—*J. C. Th. Uphof.*

8168. KASHYAP, SHIV RAM. Abnormal sporophylls in the male cone of *Cycas circinalis*. Jour. Indian Bot. Soc. 4: 312-314. 1 pl. 1925.—Some of the lower sporophylls in a staminate

cone from Lahore showed 2-3 distinct tips and corresponding midrib-like lines on the proximal portion. These sporophylls are considered as evidence that Cycas microsporophylls have been derived from originally pinnate structures.—*Winfield Dudgeon*.

8169. KASHYAP, SHIV RAM. Some abnormalities in the flowers of *Cannabis sativa*. Jour. Indian Bot. Soc. 4: 217-219. 5 fig. 1925.—*Cannabis sativa* usually is an annual at Lahore, but sometimes the subterranean part remains alive from year to year and the plant becomes perennial. On such a plant the author observed flowers of both sexes mingled in various ways, and various abnormalities in the flowers. Numerous flowers showed "curious structures intermediate between stamens and carpels." . . . Many bisexual flowers were seen, mostly with a rudimentary ovary. Most of these had only 3 perianth leaves.—*Winfield Dudgeon*.

8170. KIRCHNER, O. VON, E. LOEW, UND C. SCHROETER. Lebensgeschichte der Blütenpflanzen Mitteleuropas. [Life histories of flowering plants of Central Europe.] Lfg. 25 (Bd. 4, Abt. 1, Bog. 12-16). Empetraceae, Monotropaceae). E. Ulmer: Stuttgart, 1925.

8171. KLIKA, J. Quelques remarques sur les pélories du *Lamium maculatum* L. [Notes on pelory in *L. maculatum*.] Preslia 2: 56-58. 1923.

8172. KULKARNI, L. B. Study of flowers and pollen grains of *Carica Papaya*. Poona Agric. Coll. Mag. 17³: 127-129. 1925.—From his observations the author concludes that the dioecious staminate flowers usually fertilize the pistillate or monoecious hermaphrodite flowers, their pollen always being viable. This accounts for the irregular distribution of sex in the seedlings. However, in the absence of dioecious staminate flowers, fertilization is effected by the monoecious staminate; in the absence of both, by the monoecious hermaphrodite, though the latter occurs only in July. Seed for bearing plants should therefore be collected only in July.—*Frederick V. Rand*.

8173. LENDNER, A. L'anatomie du *Solenostemma Arghel Hayne*. [Anatomy of *Solenostemma Arghel Hayne*.] Jour. Suisse de Pharmacie. 62: 9-13. 1924.—The author describes in great detail the anatomical structure of this leaf, which is an occasional adulterant of senna.—*Charles C. Plitt*.

8174. LONAY, L. Genèse et anatomie des pericarpes et des spermodermes chez les Polygonacées. (*Polygonum aviculare* L.) [Origin and anatomy of the pericarps and seed coats of *P. aviculare*.] Mém. Soc. Roy. Sci. Liège III. 11 (part 2)⁶: 1-89. 5 pl. 1922.

8175. MASCRÉ, M. Sur l'évolution de l'étamine des Commelinacées. [The development of the stamen of the Commelinaceae.] Bull. Soc. Bot. France 72: 1060-1066. 1 pl., 4 fig. 1925.—The author studied the development of the stamen in *Tradescantia virginica* L. and *Commelina coelestis* Willd. It does not seem to him that the staminal tapetum of the Commelinaceae evolved according to the plasmodial type. At the end of the synaptic period, the contents of the cells unite into a common mass in the center of which the pollen grains develop. But it is not the cytoplasm of the nourishing cells which unites;—the fundamental mass which corresponds to the "periplasmodium" is formed from a mucilage in which the mitochondrial elements and the microsomes of the cells persist. There is no other transformation of the chondriome; there is no apparent complication of substances; there is no other sign of physiological activity. It is believed, then, that in the Commelinaceae, the nutritive cells of pollen develop in a particular fashion, soon taking on the characteristics of the raphides and mucilage cells.—*A. Tronchet (transl. by E. H. Lally)*.

8176. MESSERI, E. Ricerche sullo sviluppo del sistema vascolare in alcune Monocotiledoni. [Researches on the development of the vascular system in certain monocotyledons.] Nuovo Gior. Bot. Italiano n. s. 32: 317-362. 5 pl. 1925.—The author reviews briefly the most salient points of the "basifugal acceleration" and "phyllorhiza" theories of G. Chauveaud regarding the evolution of the vascular system in the phanerogams. Most of the work supporting these theories was done on dicotyledons on account of the difficulties involved in the study of monocotyledons, due to the fact that the hypocotyl in which the transition from the alternate to the collateral phase takes place is too short and the change abrupt. The author has studied the following species: Amaryllidaceae:—*Agave grandidentata* Jacobi, *A. Salmiana* Otto, *Pancratium maritimum* L.—Liliaceae: *Ornithogalum longibracteatum* Jacq., *Urginea Schilla* Steinh., *Drimys altissima* Ker-Gawl., *Asphodelus microcarpus* Viv., *Muscari comosum*

Mill.—Asparagaceae: *Convallaria majalis* L.—Iridaceae: *Iris foetidissima* L., *I. pallida* Lam., *Romulea parlatoresii* Tod.—Dioscoreaceae: *Tamus communis* L.—Commelinaceae: *Tradescantia pilosa* Lehm., *Commelina coelestis* Willd.—Palmae: *Phoenix silvestris* Roxb., *Chamerops humilis* L.—Araceae: *Typhonium giganteum* Engl.—Juncaginaceae: *Triglochin laxiflora* Guss.—Alismaceae: *Alisma parviflora* Pursh.—He concludes that in the species studied the change in structure of the vascular system from the root to the stem takes place by a gradual sequence of types; that an alternate type of bundle develops along the entire length of the seedling in the first days of germination and that the differentiation begins in the region of the hypocotyl with an intermediate and then a collateral bundle. This change is accentuated from the base upwards, constituting the phenomenon of "basifugal acceleration." Along with the formation of the elements of the more evolved type of bundle, there is a disintegration of the primitive ones. This acceleration is accentuated with advance in age of seedling. He believes that the "convergent," which according to this theory is the fundamental conducting unit in the phanerogams and consists of an alternate woody bundle with 2 sieve tubes, exists also in the monocotyledons. In certain species successive fundamental entities or "phyllorhizae" are well seen. Each phyllorhiza possesses a vascular system of its own and the successive elementary systems are united by intercalary bundles. In the monocotyledons the acceleration is irregular and each convergent is independent in its evolution.—*P. D. Caldis.*

8177. MEUNISSIER. Observations sur le développement de la hampe florale de l'*Eremurus elewesii*. [Notes on the development of the peduncle in *Eremurus elewesii*.] Jour. Soc. Nat. Hort. France. 1925: 1-4. 1925.

8178. MEYER, FRITZ JÜRGEN. Das trophische Parenchym. [Nutritive parenchyma.] viii + 87 p. Gebrüder Borntraeger: Berlin, 1923.

8179. MIEHE, H. Zellenlehre und Anatomie der Pflanzen. [Cytology and anatomy of plants.] 142 p. Sammlung Götschen, Vereinigung Wissenschaftl. Verleger: Berlin & Leipzig, 1921.

8180. MOLISCH, HANS. Anatomie der Pflanze. [Anatomy of plants.] 153 p. 139 fig. Gustav Fischer: Jena, 1922.

8181. MOTTIER, DAVIS M. Polyembryony in certain Polypodiaceae and Osmundaceae. Bot. Gaz. 80: 331-336. 3 fig. 1925.—Under experimental conditions individual prothallia of *Dryopteris mollis* (Jaq.) Hieron., *Matteuccia nodulosa* (Michx.) Fernald, together with certain other polypodiaceous species and *Osmunda Claytoniana* L. may be made to produce from 2 to many sporophytes. If the prothallia are permitted to attain a size of 1-1.5 cm. in width across the wings before fecundation is effected, as high as 5 independent and self-nourishing sporophytes may be developed before the weakening or partial exhaustion of the gametophytes. If the sporophytes are carefully amputated as soon as they become plainly visible, a succession of sporophytes can be produced on an individual prothallium. If the massive prothallia develop proliferations as a result of the experimental cultivation, 10-15 or more sporophytes may be produced.—*Author.*

8182. NOVAK, FRANT A. Contributions to the morphology and teratology of *Lamium album* L. Bull. Internat. Acad. Sci. Bohême 1923: 1-7. 7 pl. 1923.—"From the observations it appears that the theory of Peyritsch respecting the original tetramerous ground-plan of the flowers of Labiatae is untenable."

8183. PAGLINAWAN, S. B. A study of the flowering habits and flower characteristics of different varieties of sugar cane. Philippine Agric. 14: 111-123. 1925.

8184. PICKETT, E. L., AND MILDRED E. MANUEL. Development of the prothallium and apogamous embryo in *Pellaea glabella* Mettenius. Bull. Torrey Bot. Club 52: 507-514. 1925.—The general development of the prothallium is normal, with a tendency toward branching in some young specimens. Antheridia and motile sperms are produced, but no archegonia. Apogamous embryos are produced freely and they arise from mature tissue masses instead of the usual growing areas.—*F. L. Pickett.*

8185. PREUSS, PAUL. Zu dem Charakterbilde der Kokospalme. [Characters of the coco palm.] Tropenpflanzer 28: 111-128, 160-169. 1925.—A description is given of the localities where the coco palm is found. Attention is paid to the behavior of the palms and the distribution of the fruits in relation to their environment, especially in coastal regions.—*J. C. Th. Uphof.*

8186. PRINGSHEIM, E. G. [Rev. of: SCHMIDT, P. *Morphologie und Biologie der Melosira varians* mit einem Beitrag zur Microsporenfrage. [Morphology and biology of *M. varians* with a contribution to the question of microspores.] Internat. Rev. Ges. Hydrobiol. u. Hydrogr. 11: 114. 1923.] Arch. Protistenk. 51: 206. 1925.

8187. REHFOUS, LAURENT. Sur la phylogénie des stomates. [Phylogeny of stomata.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 40: 68-79. 10 fig. 1923.

8188. REYES, TEODÓRICO P. A study of sex change in papaya and of correlation between sex and certain morphological characters of seedlings. Philippine Agric 14: 391-412. 3 pl. 1925.—Observations show that popular beliefs about distinguishing male from female papaya seedlings by the character of the margin of the initial leaves, color and vigor of the skin, and character of the roots have no scientific basis. Removing the taproot caused no increase in proportion of female plants. Topping, or decapitation, is sometimes practised to change staminate to fruit-bearing forms. One staminate plant in 88 produced some hermaphrodite and pistillate flowers as a result of topping. Repeated topping caused a change in only 2 out of 83 branches. The age of the tree does not seem to have any effect on the result. Decapitation caused no change in female plants.—*E. B. Matzke.*

8189. ROBBINS, W. W., AND H. A. BORTHNICK. Development of the seed of *Asparagus officinalis*. Bos. Gaz. 80: 426-438. 43 fig. 1925.—A detailed account of seed ontogeny after fertilization.—*B. W. Wells.*

8190. ROHRBACH, HAUSRATH, MÜNCH, UND LIESE. Kreuzbildungen im Holze. [The figure of a cross in wood.] Mitteil. Deutsch. Dendrol. 35: 324-325. 1 pl. 1925.

8191. SAHNI, B. The ontogeny of vascular plants and the theory of recapitulation. Jour. Indian Bot. Soc. 4: 202-216. 1924.—Presidential address Indian Bot. Soc., 3rd meeting, Bangalore, January 14, 1924. The author considers evidence from vascular plants in support of the theory of recapitulation. The most that can be expected of ontogeny is a recapitulation of evolutionary tendencies. The theory was the outcome of studies on animals, where development is usually a process of transformation, and only exceptionally "does the adult animal preserve any trace of its juvenile condition. In higher plants, on the contrary, this is the general rule. Each organ as it is laid down, retains its position, and in due course becomes a permanent feature of the anatomy, so that in the adult specimen we have a more or less complete record of the life history." Evidence is drawn from published work and from the author's own experience with ferns and gymnosperms. The Filicales probably show clearer illustrations of recapitulation than any other group of the plant kingdom, and evidence from the ontogeny of the stele and leaf trace of ferns forms a large part of the argument. Brief consideration is given to the stele of *Tmesipteris*, stelar anatomy and heterophyly in *Lycopodium*, juvenile leaves on various seed plants, spur-shoots of certain gymnosperms, the ovule of *Torreya*, anatropous ovules and epigynous flowers of angiosperms, seedling anatomy of cycads, and centripetal xylem in seedlings of *Ginkgo*. The conclusion is that "the phenomenon of recapitulation is of wide occurrence among plants."—*Winfield Dudgeon.*

8192. SAKSENA, R. K., AND L. N. MATHUR. On an Indian *Ophioglossum*. Jour. Indian Bot. Soc. 4: 307-311. 3 pl. 1925.—*Ophioglossum fibrosum* Schum. is reported for the first time from northern India. Vegetative activity occurs during the summer monsoon. The plants usually produce about 3 leaves instead of the previously described 5-6; the roots have no mycorrhiza and some roots are diarch.—*Winfield Dudgeon.*

8193. SANDT, W. Zur Kenntnis der Beiknospen. [Accessory buds.] Bot. Abhandl. 7: 1-160. 50 fig. 1925.

8194. SANDU-ALDEA, C. Variabilitatea câtorva însușiri ale spicului de grâu românesc. [Variability of some qualities of the spike in Rumanian wheat.] Viața Agricolă 14: 707-724. 1923.—A biometric study on 851 spikes of Rumanian wheat.—*Emil Pop.*

8195. SAUNDERS, EDITH R. Perigyny and carpel polymorphism in some Rosaceae. New Phytol. 24: 206-224. 33 fig. 1925.—On the basis of a detailed presentation of the facts of vascular anatomy of the flower parts of *Pyrus communis*, *P. malus*, and *Cydonia japonica* it is concluded that whereas in perigyny the floral axis becomes concave and takes part in the formation of the ovary wall, the evidence is against the accepted view that this is true in epigyny (syngyny). In the types studied the polymorphic carpels are in 2 whorls of 5. The

outer are solid, sterile, and in line with the sepals and loculi; the inner are fertile and on the radius of the petals. The style filaments are of composite construction.—*I. F. Lewis.*

8196. SAUNDERS, EDITH R. The evolution of the carpel. Rept. British Assoc. Adv. Sci. 1924: 449. 1925.

8197. SAUNDERS, EDITH R. The inferior ovary. New Phytol. 24: 179-185. 11 fig. 1925.—It is questioned whether the usually accepted cup-shaped-floral-axis conception of the inferior ovary can be retained for genuine epigyny, or whether the ovary wall is exclusively foliar in nature. The term "syngyny" is suggested for the latter condition. *Aristea corymbosa* and *Begonia corallina* are figured.—*I. F. Lewis.*

8198. SCALA, AUGUSTO C. Contribución al estudio histológico de la flora chilena. [Contribution to the histological study of the Chilean flora.] IV. *Latua pubiflora* (Griseb.) Phil. Rev. Chilena Hist. Nat. 24: 73-78. 2 fig. 1920.—After an account of the history and a quoted description of *Latua* Phil. (Solanaceae), a detailed histological study of the leaf is given.—*F. W. Pennell.*

8199. SCALA, AUGUSTO C. Contribución al estudio histológico de la flora chilena. [Contribution to the histological study of the Chilean flora.] V. *Cryptocarya peumus* Nees. Rev. Chilena Hist. Nat. 25: 225-232. 1 pl., 4 fig. 1921.—After some account of the history and medicinal uses of *Cryptocarya peumus* Nees (Lauraceae), a detailed histological study of the leaf is given.—*F. W. Pennell.*

8200. SCALA, AUGUSTO C. Contribución al estudio histológico de la flora chilena. [Contribution to the histological study of the Chilean flora.] VI. *Lomatia oblicua* R. Br. Rev. Chilena Hist. Nat. 28: 17-25. 6 fig. 1924.—After some general observations on the history of this genus of Proteaceae and an enumeration of its common names, a detailed histological study is made of the leaf and stem of *Lomatia obliqua* R. Br.—*F. W. Pennell.*

8201. SCALA, AUGUSTO C. Contribución al estudio histológico de la flora chilena. [Contribution to the histological study of the Chilean flora.] VII. *Solanum tomatillo* Remy. Rev. Chilena Hist. Nat. 29: 52-57. 4 fig. 1925.—After an enumeration of the Chilean species of *Solanum* that receive the common name of "natri," a detailed histological study is made of the leaf of the chief of these: *S. tomatillo* Remy.—*F. W. Pennell.*

8202. SCHRÖDTER, KURT. Zur physiologischen Anatomie der Mittelzelle drüsiger Gebilde. [Physiological anatomy of the middle cell of glandular structures.] Flora 120: 19-86. 55 fig. 1925.—An examination of many representatives of the Cucurbitaceae, especially species of *Cucumis*, *Luffa*, *Citrullus*, *Benincasa* and *Trichosanthes*, shows the presence of glandular hairs which are characterized by the possession of a highly modified cell between the stalk and the head, which the author designates a "middle cell." In the early stages this cell gives a reaction for lignin, but later it also gives one for suberin. An extended comparison is made between the "middle cell" and the endodermis. It is suggested that its position and structure fit it to act as a control over the passage of substances into the glandular tip of the hair.—*A. G. Stokey.*

8203. SCHUSTER, JULIUS. Goethe: Die Metamorphose der Pflanzen. [Goethe's Metamorphosis of Plants.] 150 p. 16 pl., 9 fig. W. Junk: Berlin, 1924.

8204. SCHUSTLER, F. Vrilles bractéaires de l'Antigonum et de la Bruchia (Polygonacées) [Bract-tendrils of Antigonum and of Bruchia (Polygonaceae).] Bull. Internat. Acad. Tchèque Sci. 1923: 118-119. 1 fig. 1923.

8205. SENN, GUSTAV. Ueber die Ursachen der Brettwurzel-Bildung bei der Pyramiden-Pappel. [The causes of buttress-root formation in the "pyramid-poplar."] Verhandl. Naturf. Ges. Basel 35: 405-435. 8 fig. 1923.

8206. SIEBON, HUBERT. Einführung in die botanische Mikrotechnik. Zweite, vermehrte und verbesserte Auflage. [Introduction to botanical microtechnique. 2nd ed., enlarged and improved.] xi + 326 p. Gustav Fischer: Jena, 1920.

8207. SIFTON, H. B. Poison canals of *Cicuta maculata*. Bot. Gaz. 80: 319-324. 2 pl. 1925.—The origin and development of secretory canals in root and rhizome, which contain cicutoxin, is given. In the rootstalk the canals are of large size, contrasting strikingly with those of the aerial stem and leaves, which are relatively few and small. Directly related to this difference is the well-known difference in toxicity; stem and leaves are but weakly toxic.—*B. W. Wells.*

8208. SINGH, T. C. N. A note on fasciation of flowers in *Quisqualis indica* L. Jour. Indian Bot. Soc. 5: 16. 1 pl. 1926.—Flowers were observed with nearly or exactly double the normal number of parts.—*Winfield Dudgeon*.

8209. SMITH, EDITH PHILIP. The origin of adventitious growths in *Coleus*. Trans. Proc. Bot. Soc. Edinburgh 192: 145-150. 1 pl. 1925.

8210. SOUÈGES, R. Développement de l'embryon chez l'*Euphorbia exigua* L. [The development of the embryo in *E. exigua*.] Bull. Soc. Bot. France 72: 1018-1031. 34 fig. 1925.

8211. SPERLICH, A. Die Vegetationsorgane der Anthophyten. Organe besonderer physiologischer Dignität. A. Die Absorptionsorgane der parasitischen Samenpflanzen. [Vegetative organs of flowering plants. Organs of special physiological significance. A. Absorbing organs of parasitic seed plants.] (Handbuch Pflanzenanatomie . . . hrsg. von K. Linsbauer.) Gebrüder Borntraeger: Berlin, 1925.

8212. STECÓWNA, W. Czerwień metylowa jako odczynnik do barwienia blon zdrewniałych. [Methyl red as a stain for lignified walls.] (With French summary.) Acta Soc. Bot. Poloniae 3: 138-140. 1925.—The author proposes methyl red as a stain for lignified walls. To a 0.001% solution enough alkali is added to render the solution yellow. Walls of vessels, sclerenchyma, etc., are colored red because of their acidity (pH 5). The color, which suggests that of phloroglucin, is permanent.—*D. Szymkiewicz (transl.)*.

8213. STENAR, A. H. S. Embryologische studien I u. II. I. Zur Embryologie einiger Columniferen. II. Die Embryologie der Amaryllideen. [Embryological studies. I. Embryology of the "Columniferae" (Tiliaceae, Malvaceae, etc.) II. Embryology of the Amaryllidaceae. Appelbergs Boktryckeri Aktiebolag: Uppsala, 1925.

8214. SVENSSON, H. G. Embryologie der Hydrophyllaceen, Boraginaceen und Heliotropiaceen, mit besonderer Rücksicht auf die Endosperm bildung. [Embryology of the Hydrophyllaceae, Boraginaceae, and Heliotropaceae, with special regard to endosperm formation.] Almqvist & Wiksells Boktryckeri: Uppsala, 1925.

8215. SWEDERSKI, W. O określaniu nasion gatunków *Vicia* L. według wielkości znaczką. [Determination of seed of species of *Vicia* according to size of hilum.] (With French summary.) Rocznikow Nauk Rolniczych 11: 1-9. 1924.—Using a mathematical formula of Borkiewicz, the author has found that the relation between size of hilum and circumference of seed in 52 species of *Vicia* is a characteristic feature in this genus and may be used in distinguishing closely similar species.—*L. W. Sharp*.

8216. T., A. J. The "rufa" group of greenhoods. Victoria Nat. 42: 153-154. 1 pl. 1925.—This paper deals especially with the pollination mechanism of *Pterostylis acuminata*, *P. rufa* and *P. pusilla*.—*Wm. Randolph Taylor*.

8217. TADULINGAM, C., AND K. CHERIYAN JACOB. Note on some examples of plant teratology from South India. Jour. Indian Bot. Soc. 4: 225-226. 1 pl. 1925.—Descriptions are given of a specimen of *Chlorophytum tuberosum* with some of its flowers modified into bulbils and of fasciation in *Indigofera wightii* Grah. (a wild plant) and *Cucurbita pepo* DC.—*Winfield Dudgeon*.

8218. TATE, P. On the anatomy of *Orobanche hederæ* Duby, and its attachment to the host. New Phytol. 24: 284-293. 3 fig. 1925.—Seed of *Orobanche hederæ* do not germinate in the absence of the host (*Hedera*). Anatomical details of the parasite are given as well as the precise method of attachment to the host and the behavior of each tissue in both host and parasite at the point of junction.—*I. F. Lewis*.

8219. TEDIN, OLOF. Zur Blüten und Befruchtungsbiologie der Leindotter (*Camelina sativa*). [The biology of flowering and fruit-formation in the false flax (*C. sativa*).] Bot. Notiser 1922: 177-189. 1922.

8220. TETLEY, URSULA. The secretory system of the roots of the Compositae. New Phytol. 24: 138-162. 1 pl., 3 fig. 1925.—The published facts about the secretory system of Compositae Tubuliflorae are reviewed. The secretory canals are of 2 types, endodermal (*Buphthalmum speciosum* and others) and non-endodermal (*Bidens dahlioides* and others). The latter are developed in older stages of the root. The canals developing at the root tip arise (*Solidago viraurgea* and others) opposite the phloem and simultaneously with the differentiation of the first sieve tube. Microchemical tests (*Buphthalmum speciosum* and *Heliopsis*

scabra) and macrochemical tests (*Calendula officinalis*) show that the canal contents in the original stages consist of a fatty substance of the nature of an unsaturated drying oil. Other substances, probably all fat soluble, appear in the older canals.—An account is given of the meristematic activity of the cortex of the roots studied. This is closely bound up with the presence of a primary endodermis. Exogenous bud formation is described in *Gaillardia grandiflora*.—Various theories as to the method of deposit of the canal secretions are discussed. The fat is probably released during the differentiation of the phloem, from which it passes outward through the radial wall of the endodermis cells.—*I. F. Lewis.*

8221. THOMAS, E. N. The primary vascular system in Phanerogams: its characters and significance. Rept. British Assoc. Adv. Sci. 1924: 447-448. 1925.

8222. VILHELM, J. Étamines à limbe double dans les fleurs de *Mimulus*. Contributions à la tératologie expérimentale et à biologie de fleurs. [Stamens of *Mimulus* with double filaments. Contributions to experimental teratology and to the biology of flowers.] Bull. Internat. Acad. Sci. Bohême 1923: 1-4. 1 fig. 1923.

8223. VILHELM, JAN. La paracorolle des fleurs de *Mimulus*. Contribution à la morphologie et à la biologie des fleurs. [The paracorolla of the flowers of *Mimulus*. Contribution to the morphology and biology of flowers.] Bull. Internat. Acad. Tchèque Sci. 23: 53-56. 1 fig. 1923.—In the course of genetic studies there were obtained several individuals of a double-flowered form, *Mimulus tigrinoides-luteus*. These flowers are remarkable because of the presence of a number of petals occupying the interior of the corolla tube. It is evident that these petaloid excrescences—paracorolla—are part of the primitive corolla, the latter being changed to a double-limb form.—*From Abst. in Preslia (transl.).*

8224. VILHELM, JAN. La signification morphologique du calice, de la corolle et de la paracorolle dans les fleurs de *Mimulus*. Contribution à la morphologie des fleurs. [The morphological significance of the calyx, corolla and paracorolla in flowers of *Mimulus*. Contribution to the morphology of flowers.] Bull. Internat. Acad. Tchèque Sci. 23: 174-176. 1 fig. 1923.—Since the corolla is homologous with the limb of the leaf, the paracorolla cannot be explained as stipular or ligular. From the anatomical point of view the paracorolla has nothing in common with the stamens, and according to the venation the corolla and calyx in the flowers of *Mimulus* must be considered homologous with the limb of the leaf.—*From Abst. in Preslia (transl.).*

8225. VILHELM, JAN. Organe hermaphrodite d'une fleur anormale de *Lilium candidum* L. Contribution à la tératologie de la fleur. [Hermaphrodite organs of an abnormal flower of *Lilium candidum* L. Contribution to flower teratology.] Bull. Internat. Acad. Tchèque Sci. 23: 51-52. 1 fig. 1923.

8226. WEESE, J. Beiträge zur Mikroskopie der vegetabilischen Nahrungs- und Futtermittel. 1. Mitteilung. I. Zur Anatomie der Samen von *Chenopodium quinoa* Willd. [Contributions to the microscopy of vegetable food and fodder materials. I. Anatomy of the seed of *C. quinoa*.] Mitteil. Bot. Lab. Tech. Hochschule Wien 2: 19-23. 1925.—It was asserted by Hanausek that a fundamental difference exists between the seed-coats of *Chenopodium album* and those of *C. quinoa*. Griebel, however, could not agree with this view. The researches of the author have shown that Hanausek was mistaken, that he studied the seed-coat alone in *C. album*, whereas in *C. quinoa* he looked upon the pericarp together with the testa as seed coats. In this way he came to hold a mistaken view.—*H. Cammerloher (transl.).*

8227. WEESE, J. Zur Kenntnis der Anatomie der Samen eines Linsen-Wickenbastardes. [The anatomy of a lentil-vetch hybrid.] Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 5-21. 1924.—The material studied came from the hybrids made by Fruwirth between *Vicia sativa* as staminate parent and *Lens culinaris* as pistillate parent. The hybrid bears the name *Vicia leganyi*. Outstanding in this hybrid is the lack of inheritance of the characters of the pistillate parent, the almost complete resemblance to the staminate parent, and the complete or almost complete absence of segregation in the next generation. The hybrid seed are gray-green and in form are between those of vetch and lentil. In anatomical structure of the seed coats and the embryo, the seed resemble more those of *V. sativa*; in the color of the cotyledons and the amount of reserve starch, they are closely like those of *L. culinaris*. Because of a slightly bitter taste the hybrid seed resemble vetch seed and are not so palatable as are lentils. *H. Cammerloher (transl.).*

8228. WELCH, M. B. The occurrence of secretory canals in certain Myrtaceous plants. Proc. Linn. Soc. New South Wales 48: 660-673. 1923.—Secretory canals or oil ducts occur in certain species of *Tristania* and *Syncarpia*, not only in the medulla, but also in the cortex. The ducts are more numerous than in *Eucalyptus* and *Angophora*. Their function is probably protective since they are found in close proximity to the vascular tissue and in the kataphylls protecting the leaf buds as well as in the secondary phloem in certain species.—(*From Australian Science Abstracts.*)

8229. ZIEGENSPECK, H. Über die Rolle des Casparyschen Streifens der Endodermis und analoge Bildungen. [The rôle of the Casparian strips of the endodermis and of analogous structures.] Ber. Deutsch. Bot. Ges. 39: 302-310. 1921.

8230. ZIMMERMANN, ALBRECHT. Die Cucurbitaceen. Beiträge zur Anatomie, Physiologie, Morphologie, Biologie, Pathologie und Systematik. [The Cucurbitaceae. Contributions to anatomy, physiology, morphology, biology, pathology and taxonomy.] G. Fischer: Jena, 1922.

MORPHOLOGY AND TAXONOMY OF ALGAE

WM. RANDOLPH TAYLOR, *Editor*

(See also in this issue Entries 6437, 6484, 6522, 6532, 6536, 6591, 6601, 6634, 6706, 8581, 8674, 9099, 9128, 9163, 9192, 9215, 9516)

8231. ANONYMOUS. Das Seemoos. [Seamoss.] Schr. Süßwasser- u. Meeresk. 2: 324-325. 1924.

8232. ANONYMOUS. *Sphaeroplea annulina* (Roth). Bot. Tidsskr. 38^o: 445. 1925.

8233. ANONYMOUS. The Sargasso Sea. Missouri Bot. Gard. Bull. 13: 53-56. 1925.

8234. ALLEN, W. E. Recent work on marine micro-plankton at La Jolla (Cal.) Biological Station. Trans. Amer. Microsc. Soc. 42: 180-183. 1923.

8235. ALLEN, W. E. Statistical studies of surface catches of marine diatoms and dinoflagellates made by the yacht "Ohio" in tropical waters in 1924. Trans. Amer. Microsc. Soc. 44: 24-30. 1925.—Catches were made by dipping 5 gallons of water from the surface of the sea and straining it through a filtration net of no. 25 bolting silk. In more than 2,500 miles of sailing, mostly coastwise between Lower California and Callao, Peru, 148 catches were made. Most of these were very light but some of considerable size were made in 2 regions, one in the Gulf of Panama, the other just south of the Gulf of Guayaquil. The productive showing in the latter region was offset a few days later by unproductive catches on the return trip. Certain conditions of flow of the Humboldt current may have been largely responsible for this difference.—*W. E. Allen.*

8236. ALLEN, W. E. Surface catches of marine diatoms and dinoflagellates made by U. S. S. Pioneer between San Diego and Seattle in 1923. Univ. California Publ. Zool. 26: 243-248. 1924.—This paper reports the results of statistical study of 119 catches of micro-plankton made in February and March 1923, between San Diego and Seattle by U. S. S. Pioneer. Almost all catches yielded some diatoms and dinoflagellates, the San Francisco and Destruction Island regions being especially notable. Poor productivity was indicated in the Point St. George and Yakina Head regions. There was some indication of restricted geographic range of certain pelagic diatoms, for example, *Thalassiosira* to more northerly regions.—*W. E. Allen.*

8237. ALLORGE, P. Sur quelques groupements aquatiques et hygrophiles des Alpes du Briançonnais. [Aquatic and hygrophytic associations of the Briançonnais Alps.] Veröffentl. Geobot. Inst. Rübel Zürich 3: 108-126. 1925.

8238. ANDREW, G. Note on the occurrence of *Pachytheca* in the Buildwas Beds (Shropshire). Mem. and Proc. Manchester Lit. and Phil. Soc. 69: 57-60. 1925.

8239. AREVALO, C. Algunas consideraciones sobre la variación temporal del plankton en aguas de Madrid. [Temporary variations of plankton in the waters of Madrid.] Bol. R. Soc. Española Hist. Nat. 23: 94-103. 1923.

8240. BACHMAN, HANS. Charakterisierung der Planktonvegetation des Vierwaldstät-

tersees mittels Netzfängen und Zentrifugenproben. [Characteristics of the plankton vegetation of the Vierwaldstättersee through net and centrifuge samples.] Verhand. Naturf. Ges. Basel. 35: 148-167. 1 pl. 1923.—The author describes his equipment and methods of collection and study. A list is given of the various species found, followed by notes on the more interesting forms. A careful comparison is made between the results obtained through use of the net or the centrifuge alone, and their seemingly incompatible differences are explained. The rise and fall of the various species through the year is shown by a series of population diagnoses made at nearly monthly intervals throughout a period of 3½ years; while, in addition, the vertical distribution of the various forms is illustrated by analyses of the flora at various points from the surface to a depth of 100 m. At the latter depth many species were found alive, contrary to what might have been expected. It is concluded that these organisms are either eaten, or that their soft shells become disassociated before reaching the deeper regions. Attention is called to the fact that the flora of the shore region is much poorer than that of the open lake where the water is much deeper. Diagnoses and plate figures are given for the following described as new: *Aphanothece clathrata* W. West & G. West var. *brevis*, *Cryptomonas pusilla*, *Chromulina crassa*, *C. pyriforme*, *C. sphaerica*, *Mallomonas aculeata*.—Anne Hof.

8241. BAILEY, L. W. An annotated catalogue of the diatoms of Canada showing their geographical distribution. Contrib. Canadian Biol. n. s. 2²: 1-37. 1924.

8242. BAILEY, L. W. Diatoms of Quill Lake, Saskatchewan, and Airchie, Alberta. Contrib. Canadian Biol. 11: 157-165. 1921.

8243. BATCHELDER, C. H. An ecological study of a brackish-water stream. Ecol. 7: 55-71. 2 fig. 1925.—While dealing primarily with animal life, this paper indicates the position of *Fucus*, *Scopphyllum* and *Lyngbya* in the plant distribution of the area.—Wm. Randolph Taylor.

8244. BAUMERT, P. Enteromorpha auf Balanus auf Cardium. [Enteromorpha upon Balanus upon Cardium.] Schr. Süßwasser- u. Meeresk. 2: 175-177. 1924.

8245. BISWAS, K. P. Road slimes of Calcutta. Jour. Dept. Sci. Univ. Calcutta 7: 1-11. 3 pl. 1925.—“Road slimes” are Myxophyceae which grow so abundantly on roads and paths during the rainy season (summer) as to make them slippery. They possess great resistance to prolonged desiccation. As the dry season advances, the mucous sheaths lose their water and shrivel up, but the protoplasts remain alive. These dried incrustations are reduced to powder under the feet of pedestrians, and the dust is blown about by the wind. Recovery of vegetative activity is rapid when the dried cells are wetted; *Aphanocapsa brunea* Naeg. began active cell division within 5 minutes after wetting. Descriptions, figures, and notes on associated species and modes of life are given for 19 species of “road slimes” belonging to the following genera: *Aphanocapsa*, 2 spp.; *Gloeocapsa*, 1 sp.; *Chroococcus*, 2 spp.; *Oscillatoria*, 7 spp.; *Phormidium*, 1 sp.; *Lyngbya*, 1 sp.; *Microcoleus*, 1 sp.; *Nostoc*, 2 spp.; *Cylindrospermum*, 1 sp.; and *Scytonema*, 1 sp. *Oscillatoria calcuttensis* and *Cylindrospermum bengalensis* are described as new species.—Diatoms are almost always present in “road slimes,” and when there is abundance of water. *Cosmarium granulatum* Breb., *Scenedesmus* spp., *Closterium* spp., *Eudorina* spp., and other green algae also occur.—Winfield Dudgeon.

8246. BISWAS, K. The subaerial algae of Barkuda Island in the Chilkadake, Ganjam District, Madras Presidency. Jour. and Proc. Roy. Asiatic Soc. Bengal 20: 359-365. 1925.

8247. BONAR, LEE, AND G. W. GOLDSMITH. Distribution and behavior of soil algae. Carnegie Inst. Washington [D.C.] Year Book 24: 324. 1925.

8248. BOSCHMA, H. On the food of Madreporaria. Zooxanthellae. K. Akad. van Wetenschappen [Amsterdam] 27: 13-23. 2 fig. 1924.

8249. BRAND, F., AND S. STOCKMAYER. Analyse der aerophilen Grünalgenflüge, insbesondere der proto-pleurococcoiden Formen. [Analysis of the aerophytic green algae, especially the protopleurococcoid forms.] Arch. Protistenk. 52: 265-355. 1 pl. 1925.—The following are described and figured: *Chlorococcum murorum* Greville emend., *C. sociabile* n. sp., *Pleurococcus vulgaris* (Greville) Meneghini, *P. vulgaris* Menegh. emend., *Desmococcus* n. gen., *D. vulgaris* (Naeg.) n. comb., *Apatococcus vulgaris* n. gen., n. sp., *A. vulgaris* f. *minor*. The paper opens with a discussion of the biological problems involved in the investigation, and a review of literature related to the subject. The organisms were studied in nature and in

laboratory cultures. The effects of various dyes and reagents are noted, in some cases with colored figures. The cell membrane, cell contents, cell division, and the formation of family and thallus are described. The taxonomy of the group is discussed in detail, with an extensive review of the literature.—R. P. Hall.

8250. BRETSCHNEIDER, L. H. *Pyraminonas utrajectina* sp. nov., eine neue Polyblepharididae. [P. utrajectina, a new Polyblepharid.] Arch. Protistenk 53: 124-130. 10 fig. 1925.

8251. BRETSCHNEIDER, L. H. Über den feineren Bau von *Phacus costata* Conrad. [The finer structure of *Phacus*.] Arch. Protistenk. 53: 131-134. 6 fig. 1925.

8252. BRÜHL, PAUL, AND KALIPADA BISWAS. *Commentationes Algologicae. II. Algae epiphyticae epiphloiae Indicae, or Indian bark algae.* Jour. Dept. Sci. Univ. Calcutta 5: (1-22). 7 pl. 1923.—The authors describe and figure algae found on the bark of various tree species, mostly in the vicinity of Calcutta. The 25 species described are distributed among the following genera: *Myxophyceae*; *Chroococcus*, 2 spp.; *Aphanocapsa*, 1 sp.; *Microcystis*, 1 sp.; *Oscillatoria*, 2 spp., with *O. Acula* n. sp.; *Lyngbya*, 9 spp. (one with 2 var.), with *L. connectans* n. sp., *L. aestuarii* (Martens) Liebman var. *arbuscula* n. var., *L. arboricola* n. sp., *L. dendrobia* n. sp., *L. corticicola* n. sp., and *L. calcifera* n. sp.; *Porphyrosiphon*, 1 sp.; *Scytonema*, 4 spp., with *S. Zellerianum* n. sp.; *Tolypothrix*, 1 sp.; *Chlorophyceae*; *Trentepohlia*, 3 spp. and 1 var., with *T. gracilis* P. Iyengar, n. sp.—Winfield Dudgeon.

8253. BRÜHL, PAUL, AND KALIPADA BISWAS. *Commentationes Algologicae. III. On a species of Compsopogon growing in Bengal.* Jour. Dept. Sci. Univ. Calcutta 5: (1-6). 4 pl. 1923.—A red alga, identified as *Compsopogon coeruleus* Montagne, was found in successive years during December to February in stagnant ponds at Calcutta. The color varies around greenish-blue. The filaments originally are single rows of cells; soon a cortex of small cells is cut off, which may ultimately become several-layered. Branches always arise from the large central cells. The core of central cells also may divide into smaller cells. Both microspores and megaspores were observed. They develop from the cells of simple filaments, or from cortical cells of older filaments. Microsporangia occur in sori of 15-25 sporangia. Microspores are 3.4 μ , and megaspores 6-10 μ in diameter.—Winfield Dudgeon.

8254. BRÜHL, PAUL, AND KALIPADA BISWAS. *Commentationes Algologicae. IV. Compsopogon lividus, (Hooker) De Toni.* Jour. Dept. Sci. Univ. Calcutta 7: (1-3). 3 pl. 1924.—This red alga is found at Calcutta in stagnant pools during February to April, attached to aquatic plants, and mingled with various green algae. The color is bluish-black in shade and pale grayish-blue in sunlight. Filaments originally are single rows of cells, but later 1-2 cortical layers of small cells are cut off, and the central cells may divide. Branches arise from the central cylinder, and usually on 1 side only of the parent axis. Microsporangia are produced singly, or in sori of 2-20 cells, and arise from any part of the thallus. Microspores are 6-9 μ in diameter. Megaspores arise from cortical cells. A Latin diagnosis is appended.—Winfield Dudgeon.

8255. CHAUDHURI, H. *Oedogonium Nagii* n. sp. Jour. and Proc. Roy. Asiatic Soc. Bengal 20⁶: 355-358. 1 pl. 1925.

8256. CHODAT, FERNAND. Sur l'emploi de la nigrosine dans la technique, algologique. [Use of nigrosin in algological technique.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 41: 140-141. 1924.—Following the technique of R. Burri as described for bacteria, the use of nigrosin is found to be particularly effective with certain of the *Chlorophyceae* and with the *Schizophyceae* in general. The cell walls stain but faintly, while the protoplasmic elements stand out in brilliant contrast against the black background. The method is particularly favorable for observation of polymorphism, photomicrography, rapid measurements during multiplication, and the determination and representation of the protoplasmic cell contents.—A. C. Hof.

8257. CHODAT, R. ET FERNAND, CHODAT. À propos du centenaire du *Protococcus viridis* Ag. [The centenary of *Protococcus viridis* Ag.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 41: 105-108. 1924.—A brief review of the nomenclature of the species is followed by a report of the authors' researches on growing the alga in pure culture. A marked polymorphism was observed, accompanied by variations in modes of reproduction and growth. The species is broken up into 7 which are grouped into 4 sections on the basis of their cultural behavior. Of

these the last (Section IV, Gametargium R. et F. Chod.) is noteworthy since it contains the new species, *Protococcus gametiger* R. et F. Chod., which forms not only the short filaments and spores of the other forms; but, in addition, gametes produced in groups of 4, are liberated and fuse in pairs.—A. C. Hof.

8258. CHODAT, R., ET F. CHODAT. Esquisse planctologique de quelques lacs français. [Plankton of some French lakes.] Veröffentl. Geobot. Inst. Rübel Zürich 3: 436-459. 1925.—This paper, in addition to discussing the ecological aspect of the plankton, includes a description of *Elakatothrix auvernensis* n. sp.—Wm. Randolph Taylor.

8259. CHODAT, R., ET RODRIGUEZ ROSILLO. Sur une coccolithophoridée d'eau douce. [A fresh water Coccolithophore.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 42: 51-53. 1925.—A description and diagnosis of *Pantosphaera stagnicola* Chod. et Rosillo n. sp. is given. It is a fresh water member of the Coccolithophoridae, a family previously thought to be completely marine. The genus was spelled "*Pontosphaera*" by Lohmann in his original description.—A. C. Hof.

8260. CHOLODNY, N. Über eisenspeichernde Flagellaten Spongomonas und Anthophysa. [The iron consuming flagellates, Spongomonas and Anthophysa.] Arch. Soc. Russe Protistol. 2: 210-219. 1923.

8261. CONIERE, J. Notes pour servir à l'étude des stations aquatiques des Pyrénées. [Aquatic stations of the Pyrenees.] Bull. Soc. Hist. Nat. Toulouse 52: 68-84. 1924.

8262. CZURDA, V. Zur Kenntnis der Copulationsvorgänge bei Spirogyra. [Conjugation in Spirogyra.] Arch. Protistenk. 51: 439-478. 2 pl., 18 fig. 1925.—The work of other writers is reviewed, and approximately 70 references to literature are cited. Most of the author's observations are based upon *S. setiformis*, *S. Weberi*, *S. tenuissima* and *S. Hassallii*, but figures of *S. varians*, *S. fluviatilis*, *S. Heeriana*, *S. protecta*, *S. crassa* in conjugation with *S. communis*, and *S. pectinatum* are included. Just before conjugation the filaments are in a period of rapid cell-division. In the earliest stage of conjugation, the cells come together in pairs or in densely packed bundles. In addition to the apparent adhesiveness, there is a distinct cementing together of the filaments in the middle of the swollen primary cuticle layer, which at this stage is not distinctly separated from the secondary cell wall. During conjugation, the paired filaments become curved, since the cells of the female filament grow more rapidly than those of the male. Even after formation of papillae is beginning in the male filament, the female cells are often still dividing. The outgrowth of the male papillae begins before that of the female. As the papillae increase in length, the filaments are forced apart. Shortly after formation of conjugation papillae, conjugation canals are developed, their orientation being more or less oblique to the long axes of the cells. The female component of the canal is shorter and broader than that of the male. One filament may contain more cells than its mate, and the extra cells often develop papillae which have no mates. Such papillae are developed by the supernumerary cells of male filaments only, and they may fuse with the nearest female papilla; sometimes 3 male papillae are fused with a single female papilla. The writer concludes that contact alone cannot stimulate formation of papillae, and postulates a chemical influence (chemotaxis). Chemotactic influences are indicated also by formation of papillae between contiguous cells of the same filament, through either the terminal or the lateral walls. Conjugation papillae are compared with rhizoid out-growths of vegetative cells; the latter are longer and often branched. After contact of male and female papillae, the walls separating them disappear with formation of the conjugation canal; the protoplasts of the papillae then fuse. Prior to papilla formation storage of starch takes place alike in all the cells. In sexual cells storage is continued until the chloroplasts are hidden, while in supernumerary cells the starch gradually disappears. These facts support the assumption of chemotropism. The writer describes in detail the behavior of the nucleus, the formation of the zygote, and compares statistically volume and size of zygote with volume of conjugating cells. The literature on hybridization is reviewed. Both terminal and lateral types of conjugation between cells of the same filament are described and figured.—R. P. Hall.

8263. DANGEARD, L., ET P. DANGEARD. Extrait du rapport d'ordre general concernant le plankton. (Rapport preliminaire sur la campagne du "Pourquoi-Pas" en 1923 par M. J.-B. CHARCOT.) Annals Hydrographiques 1884: 35-37. 1923.

8264. DANGEARD, L., ET P. DANGEARD. Observations sur les algues. [Observations on algae.] (Corallines.) (Rapport Preliminaire sur la campagne du "Pourquoi-Pas" en 1923. par M. J.-B. CHARCOT.) *Annals Hydrographiques* 1884: 85-88. 1923.

8265. DENIS, M. Contribution à la flore algologique de l'Auvergne. [An algal flora of Auvergne.] *Bull. Soc. Bot. France* 72: 876-887. 7 fig. 1925.—Auvergne is a region where the factors controlling the distribution of aquatic or aerial algae offer a maximum variety for a restricted area. Within a radius of several "myriamètres" (10 km.) an ascent of 1500 m. may be made and there may be found mineral springs, fresh water running or stagnant, lakes of several kinds, bogs with or without sphagnum, diverse terrestrial and aerial substrata. Corresponding to this ecological diversity is a great floristic variety, which, except for the desmids and diatoms, has never been reported. The author, making use of the collection of Ch. Bruyant, with additions of his own, gives a list of the algae of the lakes, pools, bogs and streams. Several forms new to Auvergne are reported, and the following are new to France.—*Chroococcus dispersus* Lemmermann, *Euastrum turneri* West., *Staurostrum tohopekaligense* Wolle var. *trifurcatum*.—J. Beauverie (transl. by J. M. Fogg, Jr.).

8266. DIXON, C. C. The Sargasso Sea. *Geog. Jour.* 66: 434-442. 1925.

8267. DVOŘÁK, RUDOLF. Šestý příspěvek ku květeně moravských řas. [Sixth contribution to the phycology of Moravia.]—Zvl. ot. Sborn. Kl. Přírod v. Brně 7: 1-17. 1924.—The author has by this list augmented the number of algae (1235) by 22 additional species. He also describes as new: *Symploca phormidioides* and *Aegragrophila moravica*. Dvořák explored especially the neighborhood of Trembic and the Namesti, in 1921-1923.—From abst. in *Preslia* (transl.).

8268. ESPINOSA BUSTOS, MARCIAL R. Lista sistematica de algunas algas chilenas de agua dulce. [Systematic list of some Chilean fresh-water algae.] *Rev. Chilena Hist. Nat.* 27: 93-96. 1923.—A systematic list of Chilean fresh-water algae, observed by the author chiefly in the province of Santiago, is given.—F. W. Pennell.

8269. EYFERTH-SCHOENICHEN. Einfachste Lebensformen des Tier und Pflanzenreiches. [The simplest plants and animals. Natural history of the microscopic inhabitants of fresh water.] *Naturgeschichte der Mikroskopischen Süßwasserbewohnern.* 5 aufl. Lief. 1, 32 p., 2 pl., 16 fig. Berlin, 1923.

8270. FISCHER, R. Die Verbreitung von *Hildenbrandia rivularis* (Liebm.). Breb. in der Tschecho-Slovakia. [The distribution of *H. rivularis* in Czechoslovakia.] *Schriften Süßwasser u. Meeresk.* 1: 133. 1923.

8271. FISCHER, R. Einiges über Algenfarbstoffe. [Algal pigments.] *Schriften Süßwasser- u. Meeresk.* 2: 33-38. 1924.

8272. FISCHER, R. Oekologische Skizzen zur Algenflora des mährisch-schlesischen Gesenkes. [Algal Oecology of the Moravian Silesian mountains.] *Schriften Süßwasser- u. Meeresk.* 2: 185-192, 290-297. 1924.

8273. FORNI, DON B. Contributo alla ficologia del Verbano. [Contribution to the phycology of Verbano.] *Atti Ist. Bot. Univ. Pavia. Ser. III.* 2: 363-376. 1925.—This is a list of 105 algae belonging to *Confervoideae*, *Siphonaeae*, *Protococcoideae*, *Conjugatae*, *Coccogoneae*, *Homogoneae*, *Raphideae*, *Pseudoraphideae* and *Characeae*, collected by the author at Verbano, Italy.—P. D. Caldis.

8274. FREMY, P. Algues des carrières de Fleury-sur-Orne. [Algae of the quarries of Fleury-sur-Orne.] *Bull. Soc. Linn. Normandie VII*, 7: (46). 1925.

8275. FREMY, P., ET R. POTIER DE LA VARDE. Herborisations au Environs de Vire (27 juin 1923). [Botanizing in the Vire neighborhood.] *Bull. Soc. Linn. Normandie 7e Ser.* 6: 49*-51*. 1924.

8276. FRENGUELLI, JOAQUIN. Contribuciones para la sinopsis de las diatomeas argentinas. [Contributions towards a synopsis of Argentine diatoms.] *Bol. Acad. Nac. Cienc. Cordoba [Argentina]* 27: 13-120. 9 pl. 1923.—After a brief introduction including a bibliography of papers on diatoms from Argentina follows the author's contribution to the diatoms of Rio Primero in the city of Cordoba. The Rio Primero is described, a chemical analysis of its water is given, a list of 38 diatoms reported from it by P. T. Cleve in 1881 is quoted, and also a list of 12 fossil species by L. F. Deletang. The author's own collections include 90 species,

of each of which an illustration is given, as well as notes of occurrence and of special features, and also detailed bibliographic references. The following species and varieties are described as new: *Achnanthes delicatula pacis*, *Amphora lybica cymbiformis*, *Gomphonema augur capitulum*, *G. clerici*, *G. constrictum elongatum*, *G. frickei*, *G. parvulum lagenulum*, *Melosira granulata tenuis*, *M. perpusilla*, *Navicula aperta*, *N. bacterium*, *N. clericii*, *N. dactylus argentina*, *N. dactylus lata*, *N. doeringii*, *N. doeringii cryptoccephala*, *N. liburnica intermedia*, *N. nobilis cuneata*, *N. peregrina curta*, *N. perrotettii rostrata*, *N. sculpta doliola*, *N. sculpta temperei*, *N. ventricosa elliptica*, *Nitzschia levis*, *N. paradoxa paucistriata*. The following new combinations are made: *Amphora perpusilla exilis* (Grun.) (*A. pediculus exilis* Grun.), *Epithemia gibberula argentina* (Brun) (*E. argentina* Brun), *Navicula ambigua aubertii* (Herib.) (*N. aubertii* Herib.), *N. microstauron subproducta* (Grun.) (*N. brebissonii subproducta* Grun.) and *Nitzschia calida salinarum* (Grun.) (*N. salinarum* Grun.). A bibliography of 160 titles concludes the contribution.—*F. W. Pennell*.

8277. FRENGUELLI, JOAQUIN. Diatomeas de Tierra del Fuego [Diatoms of Tierra del Fuego]. In "Resultados de la primera expedición a Tierra del Fuego (1921) enviada por la facultad de ciencias exactas, físicas y naturales de la Universidad Nacional de Buenos Aires. [Results of the first expedition to Tierra del Fuego (1921) sent by the faculty of exact, physical and natural sciences of the National University of Buenos Aires.] Anal. Soc. Cient. Argentina 96: 225-263. 1923; 97: 87-118, 231-266. 1924; 98: 5-90. 13 pl. 1924.—After a brief account of previous collections from Tierra del Fuego and the Straits of Magellan, the author summarizes the extensive collections now placed at his disposition, under the heads of freshwater, marine and fossil diatoms, discussing in most detail those of the 1st category. Then the bulk of the study is devoted to an analysis of the species obtained, stating for each its occurrence near Tierra del Fuego, its wide distribution and citing many bibliographic references from over the world. Among the 135 species and their varieties the following are described as new: (vol. 96) *Cymbella clericii*; (vol. 97) *Gomphonema candelariae* with its varieties *elliptica* and *minor*, *Navicula charcotii magellanica*, *N. cuspidata major*, *N. doello-juradoi*, *N. expeditionis*, *N. fuegina* and its variety *rostrata*, *N. latevittata spathulata*, *N. magellanica candelariae*, *N. muticopsis lanceolata* and *N. muticopsis linearis*, *N. patagonica schmidtii*, *N. peregrina perlonga*, *N. peragallii*, *N. porto-montana fuegiana*, *N. silicula parva*, *N. smithii argentina*, and *N. viridis lata*; (vol. 98) *Achnanthes delicatula magellanica*, *Fragilaria construens minor*, *F. pinnata perlonga* and *F. pinnata teiragona*, *F. virescens fuegiana*, *Melosira laevis fuegiana*, *Nitzschia panduriformis parva*, *N. subtilis acicularis*, *Surirella tuberosa costata*, and *Synedra pulchella grunowii*. Many new combinations are formed. At the end of the study is a bibliography of 83 titles supplementary to the 160 listed in the author's "Diatomeas del río Primero en la ciudad de Córdoba." (See preceding Entry).—*F. W. Pennell*.

8278. FREUNDLER, P., Y. MENAGER, Y. LAURENT, ET J. LELIEVRE. L'iode dissimulé des Laminaires. I. [Iodine in the Laminarias.] Bull. Soc. Chem. France 4: 1466-1482. 1925.

8279. FURST, P. Die niederen Pflanzen des Stubachtales. [The lower plants of the Stubach Valley.] (In: Beiträge zur Kenntniss der Pflanzen und Tierwelt des Alpen-Naturschutzparks in Pinzgau.) Blatter f. Naturk. u. Naturschutz 11: 14-19. 1924.

8280. GABRIEL, C. Sur l'existence de kystes dans l'évolution d'une Chlamydomonadacée *Brachymonas submarina*. [The existence of cysts in the ontogeny of the Chlamydomonad, *B. submarina*.] Compt. Rend. Soc. Biol. 93: 361-362. 1925.—*Brachymonas submarina* lives in brackish water which sometimes becomes very salty. When the salt increases to a certain concentration the plant no longer exists vegetatively but instead forms very resistant cysts which tide the plant over until the salt again becomes less concentrated. This property places the organism in a separate section of the family.—*Oran Raber*.

8281. GAUTHIER-LIEVRE, NINA A. Algues de l'Afrique du Nord. [Algae of north Africa.] Bull. Soc. Sci. Nat. Afrique Nord 15: 130-137. 1924.

8282. GEITLER, L. Beiträge zur Kenntnis der Flora östholsteinischer Seen. [Flora of the East Holstein Seas.] Arch. Protistenk. 52: 603-611. 4 fig. 1925.—The following species are described, with figures: *Nephrochloris incerta* Geitler et Gimesi (n. gen., n. sp.), *Coelosphaerium Naeglianum*, *Stylosphaeridium stipitatum* Geitler et Gimesi (n. gen., n. sp.), *Botryococcus Braunii*.—*R. P. Hall*.

8283. GEITLER, L. Neue oder wenig bekannte Protisten. XVI. Neue oder wenig bekannte Cyanophyceen. I. [New or little known Cyanophyceae.] Arch. Protistenk. 51: 361-427. 39 figs. 1925.—The following species are described, and many of them are figured: *Arthrospira maxima* Setchell et Gardner, *A. spirulinoides* Ghose, *A. Massartii* Kuff., *A. brevarticulata* S. et Gard., *Spirulina laxa* G. M. Smith, *S. Schroederi* Koppe., *S. pseudovacuolata* Utermöhl, *S. agilis* Kuff., *Oscillatoria curviceps* var. *violascens* G. Schmid, *O. Jenensis* G. Schmid, *O. pseudogeminata* G. Schmid, *O. princeps* var. *pseudolimosa* Ghose, *O. tenuis* Ag. var. *asiatica* Wille, *O. tenuis* Ag. var. *subcrassa* Conrad, *O. brevis* Ag. f. *variabilis* Wille, *O. guttulata* van. Goor, *O. amphigranulata* van Goor, *O. Redeki* van Goor, *O. annae* van Goor, *O. angusta* Koppe., *O. tenuis* Ag. var. *nigra* Schkorbatow, *O. limosa* Ag. var. *dispersogranulata* Schkor., *O. nitida* Schkor., *O. acutissima* Kuff., *O. coerulescens* Gickl., *O. minima* Gickl., *Phormidium hormoides* S. et G., *P. Jenkelianum* G. Schmid, *P. foveolarum* f. *major* Elenkin, *P. ramosum* Boye P., *P. subcapitatum* Boye P., *P. Pristleyi* F. S. Fritsch, *P. molle* (Ktz.) Gom. var. *tenuis* Woronchin, *P. gelatinosum* Woron., *P. valderianum* (Delp.) Gom., *P. pulvinatum* Woron., *P. truncicole* Ghose, *P. Hendersonii* Howe, *Lyngbya Willei* S. et G., *L. Birgii* G. M. Smith, *L. kashyapii* Ghose, *L. truncicola* Ghose, *L. circumcreta* G. S. West var. *gelatinicola* Ghose, *L. subconferoides* Borge, *L. margaretheana* G. Schmid, *L. endophytica* Elenk. et Hollerlb., *L. cryptovaginata* Schk., *L. conradii* Kuff., *L. Corbierei* Frémy, *L. amplivaginata* van Goor, *Schizothrix Arnotti* Frémy, *S. purpurascens* Gom. f. *fasciculata* Frémy, *S. purpurascens* Gom. f. *pulvinata* Frémy, *S. polytrichoides* F. S. Fritsch, *S. antarctica* F. S. Fr., *S. tenuis* Woron. *S. lateritia* Ktz. var. *Hansgirgi* Woron., *S. bioreti* Frémy, *Hydrocoleus tyrfosus* Woron., *Oligoclonium inaequale* A. B. Klugh, *Polychlamydom calcicolum* Kuff., *Symploca erecta* Pev., *S. funicularis* S. et G., *S. aeruginosa* S. et G., *S. muscorum* Gom. var. *fusca* Frémy, *Microcoleus weeksi* S. et G., *M. confluentis* S. et G., *M. Steenstrupii* Boye P., *Anabaenopsis Elenkini* V. Miller, *Anabaena propinqua* S. et G., *A. subcylindrica* Borge, *A. Poulseniana* Boye P., *A. Jons-soni* Boye P., *A. verrucosa* Boye P., *A. gelatinicola* Ghose, *A. groenlandica* Bachm., *A. contorta* Buch., *A. variabilis* Ktz. f. *crassa* Woron., *A. solitaria* Klebs var. *tenuis* Woron., *A. flos aquae* (Lyngb.) Breb. var. *intermedia* Woron., *A. flos aquae* f. *spiroides* Woron., *A. spiroides* Klebs var. *talyschensis* Woron., *A. Scheremetievi* var. *ukrainica* Schk., *A. Scheremetievi* var. *incurvata* Elen. f. *ovalispora* Schk., *A. limnetica* G. M. Smith, *A. virguieri* Denis et Frémy, *Nostoc fuscescens* var. *mixta* F. S. Fr., *N. punctiforme* (Ktz.) Hariot var. *populorum* Geitler, *N. symbioticum* F. Wettstein, *N. insulare* Borzi, *Pseudanabaena constricta* (Szafer) Laut., *P. catenata* Laut., *P. tenuis* Koppe, *Cylindrospermum michailovskoense* Elen., *C. stagnale* var. *angustum* G. M. Smith, *C. vouki* Pevalak, *C. fluviaticum* Schk., *C. alatosporum* F. S. Fr., *C. punctatum* Woron., *C. caucasicum* Woron., *Aulosira fertilissima* Ghose, *A. striata* Woron., *Plectonema diplosiphon* Woron., *Tolypothrix tenuis* f. *terrestris* Boye P., *T. campylonemoides* Ghose, *T. conglutinata* Borzi var. *colorata* Ghose, *T. lophopodellophila* W. West, *Scytonema pulchrum* Frémy, *S. calcicolum* Kuff., *S. saleyeriensis* W. van Bosse, *S. Fritschii* Ghose, *Campylonema lahorensis* Ghose, *Hapalosiphon brasiliensis* Borge, *H. fontinalis* var. *baculiferus* Elen., *H. fontinalis* var. *hibernicus* (W. et G. S. West) Elen., *H. fontinalis* var. *intricatus* W. et G. S. West) Elen., *H. laminosus* Hansg. f. *indica* W. van Bosse, *Mastigocoleus obtusus* N. Carter, *Rosaria ramosa* N. Cart., *Herpyzonema rupicola* W. van Bosse, *H. Lorentzii* W. van Bosse, *Fischerella mucicola* var. *minor* Boye P., *F. caucasica* Woron., *Nostochopsis Wichmannii* W. van Bosse, *Stigonema la-Vardei* Frémy, *S. minutissimum* Borzi, *Brachytrichia affinis* S. et G., *Pulvinularia sueta* Borzi, *Hyphomorpha antillarum* Borzi, *Sommierella cassyrensis* Borzi, *Diplonema rupicola* Borzi, *Spelaopogon lucifugus* Borzi, *S. cavarae* Borzi, *Seguenzae sicula* Borzi, *Westiella lanosa* Frémy, *Homeothrix crustacea* Woron., *H. brevis* Kuff., *Calothrix robusta* S. et G., *C. rectangularis* S. et G., *C. marchica* Lemm., *C. Ramenskii* Elen., *C. fusca* (Ktg.) Born. et Flah. f. *minor* Wille, *C. minima* Frémy, *C. cylindrica* Frémy, *C. aeruginosa* Woron., *C. minuscula* W. van Bosse, *Rivulariopsis floccosa* Woron., *Tapinothrix mucicola* Borge, *Dichothrix orsiniana* Born. et Flah. var. *africana* Frémy, *D. fusca* F. E. Fritsch, *D. spiralis* Fritsch, *D. seriata* S. et G., *D. minima* S. et G., *D. compacta* (Ag.) Born. et Flah. var. *calcareata* Woron., *D. subdichotoma* Woron., *Rivularia mamillata* S. et G., *Gleotrichia leTestui* Frémy, *Rivularia* (Eurivularia) *planctonica* Elen., *Leptobasis caucasica* Elen., *L. spirulina* (Steinecke) Geitler, *Hammatoides simplex* Woron.—R. P. Hall.

8284. GEITLER, L. Systematische Darstellung der Cyanophyceen in morphologischer und systematischer Hinsicht. [Synoptical review of the morphology and taxonomy of the Cyanophyceae.] Beih. Bot. Centralbl. Abt. 1. 41: 163-294. 1925.—The author treats the subject under general and special parts. Under the 1st he considers:—I. the limits of the Cyanophyceae; II. Cytology; III. Morphology; and IV. Phylogeny of the group. Most of (I) is concerned with relationships to certain bacterial forms. In (II) are treated: (1) the scheme of Baumgürtel; (2) chromatoplasm and ectoplasm; (3) changes in the epiplasm; (4) changes in the endoplasm; (5) pseudo-vacuoles; (6) "Keritomie"—the web structure of the protoplast of certain Oscillatoriaceae—as distinguished from (7) vacuolization—an abnormal condition arising in old cells; (8) ring form thickening, appearing in certain Oscillatoriaceae in anticipation of cell division; (9) interpretation of cell structure; (10) division. Under (III) are considered (1) vegetative cells, (a) form and direction of division planes, (b) nanocyst formation—a new term by which is meant the production of numerous small vegetative cells by successive cell-divisions without growth till after a resting period, (c) membrane and (d) protoplasmic connections; (2) reproductive organs, (a) resting cells, (b) heterocysts, (c) hormocysts, (d) hormogonia, (e) "planococcen"—unicellular forms capable of moving on gelatin cultures, (f) gonidia, motionless unicells, survivors of dead colonies, (g) sporangia, with endospores—small cells formed in what are ordinarily known as "gonidangia," hence "gonidia," for example, *Dermocarpa*, and exospores of the genus *Chamaesiphon*; and (3) thallus structure and development history. Here the author takes up the larger groups and deals with their characteristic structures and developments. About 3 pages are devoted to the phylogeny of the Hormogoneae, Chamaesiphoneae, and Chroococceae. In the 2nd or systematic part the arrangement of the members of the group is given. This is the same as that published by A. PASCHER in: *Die Süßwasserflora Deutschlands, Österreichs und der Schweiz*. (See Bot. Absts. 15, Entry 1836.)—*N. L. Gardner*.

8285. GEITLER, L. Über abnorme Wachstumsvorgänge bei Desmidiaceen. [Abnormal growth in Diatoms.] Schriften. Süsswasser.- u. Meeresk. 2: 2-4. 1924.

8286. GEITLER, L. Über die Funktion der Heterocysten. [The function of heterocysts.] Schriften. Süsswasser.- u. Meeresk. 2: 193-194. 1924.

8287. GEITLER, L. Über neue oder wenig bekannte interessante Cyanophyceen aus der Gruppe der Chamaesiphoneae. [Interesting new and little known Cyanophyceae of the Chamaesiphoneae.] Arch. Protistenk. 51: 321-360. 2 pl., 20 fig. 1925.—Most of the species listed were found at the biological station in Lunz. The following are described: *Chamaesiphon fuscus* (Rost.) Hansg., *C. polonicus* (Rost.) Hansg., *C. polymorphus* n. sp., *G. oncobyrsoides* n. sp., *C. macer* n. sp., *Siphonema* n. gen. *C. polonicum* (Rac.) Geitler n. comb., *Chroococcopsis* n. gen., *C. gigantea* n. sp., *Pleurocapsa minor* (Hansg.) Geitler, *Xenococcus kernerii* Hansg., *Oncobyrsa rivularis* (Ktz.) Geitler, *Chlorogloea microcystoides* n. sp.—*R. P. Hall*.

8288. GEITLER, L. Zur Kenntnis der Gattung Pyramidomonas. [The genus Pyramidomonas.] Arch. Protistenk. 52: 356-370. 1 pl., 8 fig. 1925.—*Pyramidomonas* is a green chlorophyll-bearing flagellate. Its characteristics are given. These forms are primitive Volvocales and, together with *Polyblepharis*, *Dunaliella* and others, may be placed as *Polyblepharidaceae* at the base of the group of Volvocales. Their pyramidal shape separates them from other genera of the group. The species *P. montana* n. sp. and *P. tetraerhynchus* Schmarda are described in detail, with figures.—*R. P. Hall*.

8289. GEMEINHARDT, K. Zur Zytologie der Gattung Achnanthidium. [Cytology of Achnanthidium.] Ber. Deutsch. Bot. Ges. 43: 544-550. 1 pl. 1925.

8290. GERTZ, O. Über die jodidoxydasen der algen. [Iodine oxydases of algae.] Bot. Notiser 1925: 185-199. 1925.

8291. GICKLHORN, J. Notiz über Euglena cyclopica nov. spec. Arch. Protistenk. 51: 542-548. 6 fig. 1925.—The species is epizoic on *Cyclops strennuus*. The flagellates occur in groups of 2-6 especially along the joints of the abdomen and the posterior border of the cephalothorax. From plankton near Prague and Plan.—*R. P. Hall*.

8292. GOLDSMITH. La lumière et les relations symbiotiques chez la *Convoluta roscoffensis*. [Light and the symbiosis of *Convoluta*.] Compt. Rend. Acad. Sci. [Paris] 181: 927-929. 1925.

8293. GOOR, A. C. J. Die Euglenineae des Hollandischen Brackwassers mit besonderer Berücksichtigung ihrer Chromatophoren. [The Euglenineae of the brackish water of Holland with special reference to their chromatophores.] Recueil Trav. Bot. Néerland 22: 292-314. 1925.

8294. GOOR, A. C. J. Einige bemerkenswerte Perideen des Hollandischen Brackwassers [Notable Peridineae of brackish water in Holland.] Recueil Trav. Bot. Néerland. 22: 275-291. 1925.

8295. GOOR, A. C. J. Ueber einige bemerkenswerte Flagellaten der Hollandischen Gewässer. [Notable flagellates of Holland.] Recueil Trav. Bot. Néerland. 22: 315-319. 1925.

8296. GOOR, A. C. J. Ueber Nitzschia actinastroides Lemm. Recueil Trav. Bot. Néerland. 22: 320-323. 1925.

8297. GROVES, J. Chara macropogon Braun in South Africa. Jour. Botany 63: 183. 1925.

8298. GROVES, JAMES, AND GEORGE RUSSELL BULLOCK-WEBSTER. The British Charophyta. xi + 129 p. Dulau & Co., Ltd.: London, 1924.

8299. GRUBB, V. M. The male organs of the Florideae. Jour. Linn. Soc. London 47: 177-255. 35 fig. 1925.—A detailed investigation of the antheridia in 15 species of the Florideae is recorded; little or nothing was previously known of the development of the male organs in 11 of the species. It is shown that in all cases 2-5 antheridia are produced sub-terminally on an antheridial mother-cell specially developed for this function at the apex of a branch or upon the surface of the thallus. The antheridium is a colorless protoplasmic outgrowth, clothed in the elongated gelatinous wall of the mother-cell; the single spermatium formed from the whole contents of the antheridium is abstricted by the ring-like ingrowth of this wall. It is demonstrated that the spermatium is liberated by means of a split in the apex of the antheridial wall, the whole contents passing out and leaving the wall behind as an empty gelatinous sheath. In no case is the complete antheridium cut off and liberated as described by Yamanouchi for *Polysiphonia violacea*. Secondary or even tertiary antheridia may be formed within the sheath-like remains of the primary ones. Cytological investigations show that the antheridial mother-cell and the spermatium are always uniculate. When the spermatium escapes, the large nucleus is in prophase and consists of a definite number of chromatin granules united by linin threads. A new classification of the Florideae based upon spermatial types is included.—Author.

8300. GUILLIERMOND, A. À propos de la structure des Cyanophycées. [The structure of the Cyanophyceae.] Compt. Rend. Soc. Biol. 93: 1504-1508. 22 fig. 1925.—The structures of *Oscillatoria formosa*, *O. ornata*, *Phormidium favosum*, and *P. Retzii* are compared with each other and with *Beggiatoa*. The latter, it is concluded, has no relation whatever with the preceding forms.—Oran Raber.

8301. HENCKEL, A. H. Vorläufige Übersicht der Arbeiten der Planktonpartie während der Karaexpedition 1925. [Preliminary survey of the work of the plankton party of the Kara expedition of 1925.] Bull. Inst. Recherch. Biol. Sta. Univ. Perm 4⁵: 197-199. 1925.

8302. HENCKEL, A. H. Zur Biologie der Fortpflanzung der Diatomeen. [The biology of reproduction in the Diatoms.] Bull. Inst. Recherch. Biol. Sta. Biol. Univ. Perm 4⁵: 194-196. 1925.

8303. HENDERSON, E. B. Notes on a diatomaceous deposit at Dalmahoy, Edinburgh. Trans. and Proc. Bot. Soc. Edinburgh 29: 135-144. 1925.

8304. HERMANN, E. Die oscillarien der umgegend von Halle. [Oscillatorias of the Halle district.] Zeitschr. Naturwissensch. 87: 25-46. 1925.

8305. HICKSON, S. J. An introduction to the study of recent corals. xvi + 257 p. 110 fig. University Press: Manchester, 1924.—Chapter 10 deals with coral-forming types of algae, mentioning the genera *Lithothamnion*, *Lithophyllum*, *Melobesia*, *Amphiroa*, *Corallina*, *Galaxaura*, *Halimeda*, *Penicillus*, and *Tydemannia*, with respect to structure and morphology.—Wm. Randolph Taylor.

8306. HODGETTS, W. J. Contribution to our knowledge of the freshwater algae of Africa. 6. Some Fresh water algae from Stellenbosch, Cape of Good Hope. Trans. Roy. Soc. South Africa 13: 49-103. 16 fig. 1925.—The district of Stellenbosch lies some 25 miles due east of

Cape Town. Rainfall averages about 30 inches per annum, the greater part of which occurs in the winter months. The samples dealt with were collected on the Stellenbosch flats, in depressions and ditches which are waterless during the long dry summer but which fill rapidly during the rainy season. The total number of species recorded is 185, of which 53 are Desmids and 67 Diatoms. Nine species, 8 varieties and several forms are described as new; 22 species of *Cosmarium* are recorded and 10 species of *Closterium*. The following are the new species described: *Closterium spinosporum*, *C. Stellenboschense*, *Cosmarium pseudosexangulare*, *C. pseudopraemorsum*, *C. Fritschii*, *Staurastrum capense*, *Microchaete capensis*, *Zygnema capense*, and *Penium costatum*. The presence of a new species of *Microchaete* and a new variety of *M. diplosiphon* is interesting, as this genus has not previously been recorded from South Africa.—*E. M. Doidge*.

8307. HOFENDER, H. Über eine neue Craspedomonadine. [A new Craspedomonad.] Arch. Protistenk. 51: 192-203. 5 fig. 1925.—*Salpingoeca francéi* n. sp. is described.—*R. P. Hall*.

8308. HUBER-PESTALOZZI, G. Das Phytoplankton einiger hochseen Korsikas. [The phytoplankton of some alpine lakes of Corsica.] Veröffentl. Geobot. Inst. Rübel Zürich 3: 477-493. 3 pl. 1925.

8309. HULF, N. L. Observations of the relation of algae to certain aquatic animals of Vadnais Lake. Univ. Minnesota Studies Biol. Sci. 4: 185-187. 1924.

8310. HUSTEDT, FR. *Thalassiosira fluviatilis* n. sp. eine Wasserblüthe in Wesergebiet. [T. fluviatilis n. sp. as a water-bloom in the Weser district.] Ber. Deutsch. Bot. Ges. 43: 565-567. 1925.

8311. HUSTEDT, FR. Vorläufige Ergebnisse vergleichender Untersuchungen des Bacillariaceen-Vegetation ostholsteinischer Seen. [Preliminary results of comparative studies of the Diatom vegetation of East Holstein lakes.] Verh. Intern. Ver. Limnol. 17: 98-107. 1923.

8312. IRWIN, M. The accumulation of dye in *Nitella*. Jour. Gen. Phys. 8: 147-182. 1925.

8313. JÄRNEFELT, H. Zur Limnologie einiger gewässer Finnlands. [Limnology of some Finnish waters.] Ann. Soc. Zool.-Bot. Fennicae [Vanamo] 2: 185-356. 1925.

8314. KAISER, P. E. Algologische Notizen III. Schriften Süßwasser- u. Meeresk. 1: 153-155. 1923.

8315. KISSELEFF, I. Sur le phytoplankton de la mer de Barents. [Phytoplankton of Barent's Sea.] Bull. Inst. Hydrol. Russie 12: 88-89. 1925.

8316. KORCHIKOV, A. A. [Two new organisms from the Volvocales group.] Arch. Soc. Russe Protistologie 2: (1-16.) 1923.

8317. KORCHIKOV, A. A. [Structure and grouping of the Volvocales and flagellates.] Arch. Soc. Russe Protistol. 2: (1-21.) 1923.

8318. KORCHIKOV, A. A. [Protochlorinae, a new group of Volvocales.] Arch. Soc. Russe Protistologie 2: (1-16.) 1923.

8319. KRASSEKE, G. Die Bacillariaceen-Vegetation Niederbassens. [The Bacillariaceae of Niederbassens.] Abhandl. Ber. Ver. Naturk. Cassel 56: 5-123. 1925.

8320. KRENNER, J. A. Über die Bewegung der Oscillarien. [Locomotion of the Oscillariaceae.] Arch. Protistenk. 51: 530-541. 1 pl. 1925.—A number of the earlier papers on the subjects are reviewed. It is concluded that the layer covering the filaments contains a hemicellulose-like substance. Spontaneous movement never occurs in single cells or in filaments consisting of only a few cells. The osmotic pressure of cells, as determined for *O. Fröhlichii*, *O. curvipes* and *O. tenuis*, is higher in thin filaments than in thick ones. The relatively high osmotic pressure of the cells is believed to be the causative factor in movement, but no attempt is made to explain this relation.—*R. P. Hall*.

8321. KRIJGSMAN, B. J. Beiträge zur Problem der Geisselbewegung. [Contributions to the problems of flagellar movement.] Arch. Protistenk. 52: 478-488. 6 figs. 1925.—In a study of *Monas* the author has distinguished several types of flagellar activity: forward locomotion with full swing of the flagellum; forward locomotion with short swing of the flagellum; lateral locomotion; backward locomotion; activity of flagellum with organism stationary. Observations were made with a dark-field condenser. Diagrams of each type of flagellar ac-

tion are included. It is concluded that locomotion in this species is the result of the oar-like activity of the flagellum, and that at present the movements of the flagellum can not be explained on the basis of purely mechanical laws.—*R. P. Hall.*

8322. KUCHAKOVICH, S. Zur Kenntnis der Entwicklungsgeschichte von Volvox. [The development of Volvox.] Bull. Acad. Sci. Ukraine 1: 31-36. 1923.

8323. LEWIS, I. F. A new conjugate from Woods Hole. Amer. Jour. Botany 12: 351-357. 2 pl. 1925.—A new genus, *Temnogyra*, with a single species, *T. Collinsii*, is described. It resembles *Spirogyra* and *Chlorella*, differing from the former chiefly in the production of specialized gametes formed by the unequal division of a mother-cell, and from the latter chiefly by the spiral character of the chloroplast, the development of a conjugation tube, and by differential cell division leading to gamete formation. The author points out that in forms like this either reduction does not occur in zygospore germination or sex determination is not associated with chromosome reduction.—*E. W. Sinnott.*

8324. LANGHANS, V. H. Gemischte populationen von Ceratium hirundinella (O. F. M.). Schrank. [A mixed population of *C. hirundinella*.] Arch. Protistenk 52: 585-602. 34 figs. 1925.

8325. LINDEMANN, E. Das Plankton des Badeteiches von Lissain Posen. [Plankton of the bathing pools of Lissain Posen.] Schriften Süßwasser- u. Meeresk. 1: 62-65. 1923.

8326. LINDEMANN, E. Eine interessante Süßwasserflagellate. [An interesting freshwater flagellate.] Schriften Süßwasser- u. Meeresk. 1: 7-10. 1923.

8327. LINDEMANN, E. Peridineen aus dem Alpengebiete. [Alpine Peridineae.] Schriften Süßwasser- und Meeresk. 2: 194-201. 1924.

8328. LINDEMANN, E. Peridineenbestimmungen. [Naming Peridineae.] Mikrokosmos 19²: 31-33. 15 fig. 1925.

8329. LINDEMANN, E. Ueber Peridineen einiger Seen Süddeutschlands und des Alpengebietes. [Peridineae of some South German and Alpine lakes.] Schriften. Süßwasser- u. Meeresk. 1: 158-165, 307. 6 fig. 1923.

8330. LINDEMANN, E. Vom Plankton des Golfes von Neapel. [Plankton of the Gulf of Naples.] Schriften. Süßwasser- u. Meeresk. 2: 217-225. 1924.

8331. LINDEMANN, E. Wie wirkt eine künstliche Teichdüngung auf die Planktonentwicklung? [How does artificial pond fertilizing affect plankton?] Schriften Süßwasser- u. Meeresk. 1: 184-187, 211-213. 1923.

8332. LINDEMANN, E. Zoologische Ergebnisse der von Prof. Dr. F. Klute nach Nordpatagonien unternommenen Forschungsreise. III. Peridineen. [Zoological results of the explorations of F. Klute to northern Patagonia. III. Peridineae.] Arch. Hydrobiol. 16: 327-328. 1925.

8333. [LJUBIMENKO, V. N.] Любименко, В. Н. О количестве хлорофилла у морских водорослей. [The quantity of chlorophyll in marine algae.] (French résumé.) Известия Научного Института имени П. Ф. Лесгафта [Bull. Inst. Lesshaft] 10: 127-132. 1924. (See also Bot. Absts. 14, Entry 4425.)

8334. LLOYD, F. E. Sexual reproduction in water silk. Sci. Monthly 22⁴: 331-340. 1 fig. 1920.

8335. LUNDQUIST, G. Limnischer Diatomeenschwamm und dessen Bildungsbedingungen. [Aquatic diatoms and their formations.] Svensk. Geol. Unders. Arb. 17: 3-17. 1923.

8336. MATTIROLO, O., e P. GIAY-LEVRA. Primo elenco delle diatomee fluviali dei dintorni di Torino. [First catalogue of the fluvial diatoms of the vicinity of Turin.] Atti R. Accad. Sci. Torino 58: 283. 1922-1923.—The authors present a catalogue of 268 species of diatoms found in the springs, torrents and rivers around Torino. They note the occurrence of several terrestrial (?) diatoms which live also in the rivers, illustrating an adaptability to widely differing habitats.—*Felice Gioelli (transl. by J. M. Fogg, Jr.).*

8337. MAYER, A. Die Bacillariaceen der Regensburgener Gewässer. Beschreibung der in Gebiete vorkommenden Arten und Formen mit Bestimmungstabellen. [Diatoms of Regensburg. Description of species and forms, with keys.] Ber. Naturw. Verh. Regensburg 41: 1923.

8338. MEEK, A. Plankton investigations 1921-22. Dept. Dove Mar. Lab. 12: 148-155. 1923.

8339. MERLE, R. La mer des sargasses. [Sargasso Sea.] La Nature 1924²⁶⁰⁹: 221-224. 4 fig. 1924.

8340. MEUNIER, ALPHONSE. [Microplankton de la mer flamande. III. Les péridinien.] [Microplankton of the Flemish sea. III. The Peridiniales.] Mem. Mus. Roy. Hist. Nat. Belgique 8: 1-116. 7 pl. 1919.—Following the example of Paulson, the Peridiniales are divided into 3 families, namely: Prorocentraceae in which the shell is formed of 2 lateral plates and is without a groove; Peridiniaceae in which the shell consists usually of several plates and which is divided into 2 distinct parts by a transverse groove; and the Gymnodiniaceae which lack shells entirely but which are marked with 1, 2, or even several transverse furrows. Since most of the species found belong to the Peridiniaceae a general discussion of that family is given in addition to a more special discussion of the chief genus, *Peridinium*, which is here defined as comprising those forms in which the shell is composed of 21 plates, 14 surrounding the apical cone and 7 the antapical, and is marked externally by 2 grooves, one ventral and one transverse. The genus is further divided into 2 series, the Planozones in which the girdle is not sunken below the level of the surface of the plates but is determined only by protruding ridges; and the Cavozone in which the girdle is depressed into a deep transverse groove. A list of the species found follows, with synonymy, description, observations and full illustrations of each. *Properidinium* n. gen. is set off from *Peridinium* to include those forms in which the number of apical plates is reduced to 13; and *Coolia* n. gen., also of the Peridiniaceae, is established to contain the single species, *Coolia monotis* n. sp. New species described are; *Peridinium micrapium*, *P. deficiens*, *P. nudum*, *P. fimbriatum*, *P. divaricatum*, *P. yserense*, *P. tuberosum*, *P. stagnale*, *Properidinium avellana*, *Coolia monotis*, *Goniaulax cochlea*, *G. loculatum* and *Amylax diacantha*. New combinations include; *Properidinium aspinum* (Paulson), *P. Thorianum* (Paulson), *P. Heterocapsa* (Stein), *P. apiculatum* (Ehrenberg), *P. umbonatum* (Stein), and *P. inaequale* (Lemmermann).—A. Hof.

8341. MEYER, K. I. [Algal studies of the Petrovsko-Kebelevisk lakes.] Bull. Inst. Exper. Tourbe 1923: 1-26. 3 fig. 1923.

8342. MEYER, K. I. Le Sivach (Mer Putride) et sa flore algologique. [The Dead Sea and its algal flora.] Bull. Inst. Hydrobiol. Russie 15: 21-44. 1925.

8343. MEYER, K. I. [Algal flora of Lake Baikal.] Bull. Soc. Bot. Russe, Sect. Moscou 1: 1-27. 1 fig. 1923.

8344. MEZ, C. Bemerkungen zur phylogenie der Algen und Pilze. [The phylogeny of the algae and fungi.] Bot. Archiv 5: 109-113. 1924.

8345. MILLER, V. V. [Classification of Anabaena.] Arch. Soc. Rosse Protistol. 2: 116-121. 1923.

8346. MOBIUS, M. Die Erforschung der Pflanzen des Meeres. [The study of sea plants.] Natur u. Museum 55: 165-179. 10 fig. 1925.—The Sargasso Sea, including algal districts, etc.

8347. MOORE, B., E. WHITLEY, AND T. A. WEBSTER. Studies of photosynthesis in marine algae. Proc. and Trans Liverpool Biol. Soc. 28: 38. 1923.

8348. NAUMANN, E. Einige allgemeine Gesichtspunkte betreffs des Studium der regionalen Limnologie. [A general concept for the study of regional limnology.] Verh. Intern. Verein. Limnol. 2: 100-110. 1924.

8349. NAUMANN, E. Einige grundzuge der regionalen Limnologie Sud- und Mittelschwedens. [Fundamentals of regional limnology of south and central Sweden.] Verh. Int. Ver. Limnol. 1: 75-85. 1923.

8350. NAUMANN, E. Notizen zur Biologie der Süßwasser-algen. III. Ein vegetations-farbenes Neuston aus Euglena flava Dangeard. [Notes on biology of fresh water algae. 3. A Neuston from E. flava.] Ark. Bot. 19¹⁴: 1-7. 1925.

8351. NAUMANN, E. Notizen zur experimentellen Morphologie des pflanzliche Limnoplanktons. 1, 2. [Notes on the experimental morphology of plankton.] Bot. Notiser 1925: 47-51. 1925.—1. Influence of water movement on form and structure of colonies of *Microcystis aeruginosa* Kütz. In an aquarium in still water this produced large clathrate colonies of scattered cells, with jelly lacking; in similar water agitated by injecting air, it formed small colonies, not clathrate, with thick jelly, and closely attached cells.—2. The effect of pH of water on the size of colonies of *Synura wella* Ehrenb. The colony can be maintained between

pH 3.6 and pH 7.8, but shows diminished size at these extremes after 1 day. At pH less than 3.4 and greater than 8, colonies show a rapid fragmentation with loss of motility, within 2 hours. Between pH 3.6 and pH 3.8, colonies remained normal for $3\frac{1}{2}$ hours.—*H. K. Svenson*.

8352. NAUMANN, E. Notizen zur systematik der Süßwasseralgen X. Ueber *Nostoc elgonense* n. sp., eine neue art der gattung *Nostoc* von Mount Elgon, Kenya Colony. [The systematics of freshwater algae. X. *Nostoc elgonense* n.sp. from Mount Elgon.] *Ark. Bot.* 19¹⁵: 1-7. 1925.

8353. NAUMANN, E. Untersuchungen über einige sub- und elittoral Algenassoziationen unserer Seen. [Researches on some sub- and Elittoral algal associations of our lakes.] *Ark. Bot.* 19¹⁵: 1-30. 1925.

8354. NIENBURG, W. Die Polarisation der Fucoseier durch das Licht. [Polarization of *Fucus* eggs by light.] *Wissenschaftl. Meerenuntersuch., Abt. Helgoland, N. F.* 15⁷: 1-11. 8 fig. 1923.

8355. OKAMURA, K. On *Sargassum giganteifolium* Yamada. *Bot. Mag. Tokyo* 39: 346. 1925.

8356. OKAMURA, K. On the distribution of tropical algae in the Japan Sea. *Bot. Mag. Tokyo* 39: 387-388. 1925.

8357. OKAMURA, KINTARO, AND S. UYEDA. On *Laminaria angustata* Kjellm and *L. longissima* Mijabi. *Jour. Imp. Fisheries Inst. [Tokyo]* 21: 20-25. 1 pl. 1925.

8358. OSTERHOUT, W. J. V. Is living protoplasm permeable to ions? *Jour. Gen. Phys.* 8: 131-146. 1925.—Studies with *Valonia macrophysa*.

8359. OSTERHOUT, W. J. V., AND M. J. DORCAS. Contrasts in the cell sap of *Valonias* and the problem of flotation. *Jour. Gen. Phys.* 7: 633-640. 1925.

8360. PALMER, T. C. Nomenclature of *Trachelomonas*. *Proc. Acad. Nat. Sci. Philadelphia* 77: 185. 1925.

8361. PANINI, F. Osservazioni sulla sostanza fondamentale nella membrana cellulare di diverse Aigue. [Fundamental substances in the cell wall of algae.] *Atti Reale Inst. Veneto Sci. Lett. Arti* 84: 57-78. 1924-25.

8362. PANTANELLI, E. Influenza della condizione di vita sullo sviluppo di alcun alghe marine. [Influence of environment on the development of certain marine algae.] *Arch. Sci. Biologiche* 4: 81-87. 1923.

8363. PARTHASARATHY IYENGAR, M. O. *Hydrodictyon indicum*, a new species from Madras. *Jour. Indian Bot. Soc.* 4: 315-317. 2 pl. 1925.—A new *Hydrodictyon* is described under the name *H. indicum*. The coenocytes are very large, $1 \times 10-16$ mm. The walls are thick and lamellated, with numerous lamellated projections extending inward.—*Winfield Dudgeon*.

8364. PARTHASARATHY IYENGAR, M. O. Note on two new species of *Botrydium* from India. *Jour. Indian Bot. Soc.* 4: 193-201. 5 pl. 1925.—*Botrydium tuberosum* and *B. divisum* are described as new species. Both grow in the usual *Botrydium* habitats. *B. tuberosum* found at Madras, and later reported from Lahore, is 0.5 mm. in diameter, with swellings at the ends of the rhizoids. As the habitat becomes dry, the protoplasmic contents of the vesicle migrate into these swellings, which become thick-walled cysts.—*B. divisum*, from Calcutta, has the vesicle divided dichotomously into 2-5 (or even 7) somewhat elongated lobes which lie more or less flat on the ground. Some vesicles were seen full of small spores. No cysts were found, probably because the habitat had not yet become dry enough.—The branching of *B. divisum* is regarded as an ancestral character. The author has seen very young specimens of *B. granulatum* and *B. tuberosum* showing a suggestion of branching, but the character is lost with age. He suggests that the ancestry of *Botrydium* may be traced back through *B. divisum* to *Dichotomosiphon*, and even to some form like *Vaucheria*, and that erectness and loss of branching have been due to the terrestrial habitat.—*B. granulatum* is widely distributed in India, but has not been found at Madras. An apparently valid variety of *B. granulatum*, with a somewhat conical vesicle and with cysts in slight enlargements in the rhizoids, is reported from the Nandhi Hills in Mysore State.—*Winfield Dudgeon*.

8365. PASCHER, A. Die braune Algenreihe der Chrysophyceen. [The brown algae series of the Chrysophyceae.] *Arch. Protistenk.* 52: 489-564. 1 pl., 56 fig. 1925.—The general

characteristics of the *Chrysophyceae* are reviewed. Of the Chrysotrichales the following are described with figures: *Phaeothamnion conferricola* Lagerheim, *P. borzianum*, *P. polychrysis*, *Chrysoclonium ramosum*, *Nematochrysis sessilis*, *Gleothamnion ciencowski*, *Thallochrysis pascheri* Conrad, *Phaeodermatium rivulare* Hansgirg, *Apistonema commutatum*. Of the Chrysosphaerales: *Chrysosphaera nitens*, *Chrysobotrys parvula*, *Epichrysis paludosa* (Korschikoff) Pascher, *Stichogloea* Chodat, *Sphaerochrysellia planktonica* (Smith) Pascher, *Chrysostomum simplex* Chodat, *Clathrostomum perlatum* Chodat, *Chrysostrella breviappendiculata* Chodat, *C. paradoxa* Chodat, *C. minor* Chodat, *Phaeocitrus colliger* Chodat, *Selenophaea granulosa* Chodat. Of the Chrysocapsales: *Chrysocapsa planktonica* Pascher, *C. paludosa* West, *Gleochrysis pyrenigera*, *Chrysopora fenestrata*, *Chrysosaccus incompletus* (Bohlin) Pascher, *Phaeosphaera gelatinosa* West and G. S. West, *Tetrasporopsis fuscens* (A. Braun) Lemmermann, *Phaeocystis* Lagerheim, *Phaeogloea mucosa* Chodat, *Naegeliella flagellifera* Correns, *Hydrurus foetidus*. The paper ends with a systematic review of the Chrysophyceae and their parallel relations to the other algal series: Heterokontae and Chlorophyceae.—R. P. Hall.

8366. PASCHER, A. Die Chrysophyceen eine wenig bekannte braune Algenreihe. [The Chrysophyceae, a little known brown algal group.] Mikrokosmos 19: 55-60. 1925.

8367. PASCHER, A. Neue oder wenig bekannte Protisten XV: Neue oder wenig bekannte Flagellaten XIII. Mit: Alphabetische Namenverzeichnis der in der "Rubrik," Neue oder wenig bekannte Protisten bis Bd. 50 behandelten Formen. [New or little known Protista. Flagellates.] Arch. Protistenk 50: 486-510, 516-522. 1925.

8368. PASCHER, A. Neue oder wenig bekannte Protisten. XVII. Neue oder wenig bekannte Flagellaten. XV. [New or little known Protista. Flagellates.] Arch. Protistenk. 51: 549-577. 21 fig. 1925.—The following flagellates are described, with figures and with references to original descriptions: *Bicoeca exilis* Penard, *Histiona campanula* Penard, *Salpingoeca lepidula* Pen., *S. polygonatum* Pen., *Cryptomonas stigmatica* Wislouch, *C. salina* Wisl., *Exuviaella asymmetrica* Wisl., *Gymnodinium amphidinoides* Geitler, *Raciborskiella* n. gen. Wisl., *R. salina* Wisl., *Carteria salina* Wisl., *C. scrobiculata* Playfair, *C. bullulina* Pl., *C. australis* Pl., *Pedinopera* n. gen. Pascher, *P. rugulosa* Pascher (*Carteria rugulosa* Pl.), *P. granulosa* Pascher (*Carteria granulosa* Pl.), *Chlamydomonas reniformis* Pl., *C. rotula* Pl., *C. pusilla* Pl., *C. maculata* Pl., *C. paupercula* Pl., *C. lismorensis* Pl., *C. obscura* Pl., *Chlorogonium elegans* Pl., *C. minimum* Pl., *Pteromonas cruciata* Pl., *Phacotus australis* Pl., *P. glaber* Pl., *P. crassus* Pl., *Colacium ovale* Pl., *C. arcuatum* Pl., *Trachelomonas botanica* Pl., *T. ovalis* Pl., *T. pusilla* Pl., *T. pulcherrima* Pl., *T. ampullula* Pl., *T. conica* Pl., *T. clavata* Pl., *T. cactacea* Pl., *T. granulosa* Pl., *T. australis* Pl., *T. bacillifera* Pl., *T. lismorensis* Pl., *T. sidneyensis* Pl., *T. scabra* Pl., *T. napiformis* Pl., *T. sessilis* Pl., *T. triquetra* Pl., *T. gibberosa* Pl., *T. subglobosa* Pl., *T. longissima* Pascher (*T. caudata* var. *australica* Playfair).—R. P. Hall.

8369. PASCHER, A. Neue oder wenig bekannte Protisten. XVIII. Neue oder wenig bekannte Flagellaten. XVI. [New or little known Protista. Flagellates.] Arch. Protistenk. 52: 565-584. 12 fig. 1925.—The writer describes the following flagellates, with figures, and includes references to the original descriptions: *Chromulina crassa* Bachmann, *C. pyriiformis* Back., *C. sphaerica* Bach., *Mallomonas aculeata* Bach., *Conradiella* n. gen. Pascher, *C. calva* (Conrad) Pascher, *C. circulata* Pasch., *Tesella* n. gen. Playfair, *T. volvocina* Pl., *Synura adamsii* Smith, *Ochromonas pallida* Korschikoff, *O. wislouchii* Skvortzow, *Phaeococcus planktonicus* var. *oblonga* Smith, *Cryptomonas lobata* Korsch., *C. pusilla* Bach., *C. coerulea* Geitler, *C. pyrenoidifera* Geitler, *Rhodomonas rubra* Geit., *Pyramimonas Nadsoni* Skvortz., *Chlamydotrys* n. gen. Korsch., *C. stellata* Korsch., *C. gracilis* Korsch., *Carteria ovata* Pl., *Phacotus rectangularis* Pl., *P. reticulatus* Pl., *Euglena charkowiensis* Svireenko var. *minor* Skvort., *Eutreptia Pascheri* Skvort., *Trachelomonas biseta* Schiller, *Phacus pleuronectes* var. *Swireenkoana* Skvort., *P. setosa* France var. *crenata* Skvort., *Menoidium oblongum* Skvort., *M. curvatum* Skvort., *Anisonema Steinii* Skvort.—R. P. Hall.

8370. PASCHER, A. Technische Winke für die Untersuchungen von Süßwasser Peridineen. [Technical points in the study of fresh water Peridineae.] Archiv. Protistenk. 46: 385. 1923.

8371. PAVILLARD, J. Aperçu sociologique sur le plankton marin. [Sociological aspect of marine plankton.] Veröffentl. Geobot. Inst. Rübel Zürich 3: 430-436. 1925.

8372. PETERSEN, J. BOYE. Cyanophyceae. [In: Plants from Beata Island, St. Domingo, collected by C. H. Ostenfeld.] Dansk. Bot. Arkiv. 4: 11-13. 1924.
8373. PFEIFFER, H. Die epiphytischen Eugleninen. [Epiphytic Euglenineae.] Schriften Süsswasser- u. Meeresk. 2: 152-153. 1924.
8374. PFEIFFER, H. Unsere Kenntnisse von Zusammenleben von Ziliaten mit grünen Algen (Zoochlorellen). [Symbiosis of ciliates with green algae.] Schriften Süsswasser- u. Meeresk. 1: 202-204. 1923.
8375. PHILLIPS, REGINALD W. On the genera *Phyllophora*, *Gymnogongrus* and *Ahnfeldtia* and their parasites. New Phytol. 24: 241-255. 5 fig. 1925.—The author calls attention to the need of further study of the life histories of the above plants, and their relations to their parasites.—I. F. Lewis.
8376. PHILLIPS, R. W. On the origin of the cystocarp in the genus *Gracilaria*. Ann. Bot. 39: 787-803. 1925.
8377. PRÁT, S. Beitrag zur Kenntnis der Organisation der Cyanophyceen. [Contribution to the knowledge of the structure of the Cyanophyceae.] Arch. Protistenk. 52: 142-165. 1 pl., 3 fig. 1925.—The paper includes a review of the literature, description of the central body and central granules, a discussion of the osmotic phenomena, and directions for photomicrography with ultraviolet light. The typical Cyanophycean cell is said to consist of a central region containing central granules, a peripheral region of cytoplasm containing pigment and other granules, and the cell membrane. The central body may be sharply defined, staining intensely with methylene blue, or else without distinct boundary and staining diffusely with the same stain, depending upon physiological conditions. The appearance of the central body and central granules after various methods of staining is described in detail. The production of plasmolysis with various salt solutions is described in *Oscillatoria* and *Phormidium*. It is concluded that cell structure in the Cyanophyceae is markedly influenced by factors of nutrition. The results of staining the cells agree with observations based upon ultraviolet photography. In no case is a distinct cell nucleus to be demonstrated.—R. P. Hall.
8378. PRÁT, S. Das Aeroplankton neu geöffneter Höhlen. [The aeroplankton of new excavations.] Centralbl. Bakt. [etc.] 2 Abt. 64: 39-40. 1925.
8379. PRÁT, S. Quelques remarques sur l'organisation des Cyanophycées. [Organization of the Cyanophyceae.] Bull. Internat. Acad. Sci. Prague, 1920.—The filaments of the Cyanophyceae, yellowed in the absence of nitrogen, do not color with methylene blue either before or after fixation, or do so with difficulty. The central body resists the action of pepsin. The filaments become green on being returned to a nutrient solution, the nitrogen salts being especially active, and the central body may then be readily colored. The deplasmolytic action of glycine or KNO_3 is more rapid on the bleached filaments than on the green ones. Phosphates are absolutely indispensable for the development of the volutin grains. In pure cultures of *Hormidium nitens*, *Chlorella protothecoides* and *Scenedesmus obliquus* the granules stainable with methylene blue appear only in solutions containing phosphates.—S. Prát (translated).
8380. PROCHAZKA, J. Sv. Katalog českých rozsivek. [Catalogus Diatomacearum Bohemiae.]—Arch. Prirod. Vyzk. Cech. Díl [Praha] 18²: 1-114. 1924.
8381. RANSOM, E. Le verdissement des huîtres. [Greening of oysters.] Compt. Rend. Acad. Sci. [Paris] 180: 165-176. 1925.
8382. RANSOM, G. Quelques observations sur le plankton et liste des méduses requilles par Le Tanche pendant sa croisière de 1924. [Some observations on the plankton and list of medusae collected by Le Tanche during the cruise of 1924.] Bull. Mus. Nat. Hist. Paris 31: 379-382. 1925.
8383. RAUCH, A. Fortschritte in den Systematik, Floristik und Pflanzengeographie der Schweizerflora. Algen. [Progress in the systematics, floristics and plant geography of the Swiss algae.] Ber. Schweiz. Bot. Ges. 32: 24-29. 1923.
8384. RICH, F. Further notes on the algae of Leicestershire. Jour. Bot. 63: 71-77. 1925.
8385. RICH, F. The algae of Leicestershire (Cont.) Jour. Bot. 63: 262-273. 1925.
8386. ROLL, J. V. [Algae found in the lakes of Lapland and the Olonetzkoï Province.] Vologda 1923: 1-63. 8 pl. 1923.

8387. ROSA, K. Přehled českých řas šroubatkovitých. [Outline of the Czechoslovakian Zygnemaceae.] Čas. Nár. Mus. 1924: 97-105, 129-133. 1 pl. 1924.—The author outlines the genera of the Zygnemaceae present in Bohemia. He indicates the presence of 1 species of *Debarya*, 33 of *Spirogyra*, 5 of *Zygnema*, 10 of *Mougeotia* and 1 of *Zygonium*.—From abst. in *Preslia* (transl.).

8388. ROSE, M. Quelques remarques sur le plankton des Cotes d'Annam et du Golfe de Siam. [The plankton of the Annam Coast and the Gulf of Siam.] Bull. Econ. Indochine 28: 453-457. 1925.

8389. ROSENVINGE, L. KOLDERUP. The spiral arrangement of the branches in some Calithamnieae. Biol. Meddel. K. Danske Videnskab Selskab. 2^o: 1-70. 1920.—In all of the 5 species examined a spiral arrangement of the branches occurred, but with varying frequency. The angle of divergence is quite variable, ranging usually between $\frac{1}{4}$ and $\frac{1}{3}$ of the circumference. Branchless joints are sometimes found but do not affect the direction of the spiral. Changes in the direction of the spiral were met with in all the species examined. The first joints of the primary shoots are devoid of branches, and are followed by a series of joints bearing irregularly placed branches and finally by the spiral arrangement. On the lateral shoots the branchless zone is omitted. The 1st branch of the 2nd order has nearly always a transverse position, and the 1st step in the spiral region is usually directed toward the outer side of the shoot. In 4 of the species examined a more or less marked correlation occurs between the direction of the spiral and the position of the first branch of the 2nd order. It is supposed that this correlation is the consequence of the asymmetry of the young segments of the axes which bear the spirally arranged branches. The text is accompanied by many tables of data and detailed diagrams of the branches.—A. C. Hof.

8390. ROSENVINGE, J. L. A. K. The marine algae of Denmark. Rhodophyceae 3. (Ceramiales) D. Kgl. Danske Vidensk. Selsk. Skrift. Naturvidensk. og. Math. Afd. 7: 287-487. 1923-1924.

8391. ROTHEA, F. Les Algues médicales. [Algae in medicine.] Ann. Drogue et Dérivés 18: 5-12. 1924.

8392. RYLOV, W. M. Notiz über die Wasserblüthe von *Anabaena Scheremetievi* und *Euglena sanguinea* der Teiche in der Umgebung von Alt-Peterhof. [Waterbloom of *A. Scheremetievi* and *E. sanguinea* in the Alt. Peterhof district.] Russische Hydrobiol. Zeitschr. 2: 107-111. 1923.

8393. RYLOV, W. M. Zur methodik der Untersuchungen des Kammerplanktons in sehr seichten Gewässern. [Methods of investigating "Kammer" plankton in shallow water.] Schriften Süßwasser- u. Meeresk. 2: 61-68. 1924.

8394. SAUVAGEAU, C. Sur la localisation du brome chez une Algue floridée (*Antithamnionella sariensis* Lyle). [Localization of bromine in a red alga.] Compt. Rend. Acad. Sci. [Paris] 181²²: 841-843. 1925.

8395. SAUVAGEAU, C. Sur les bromiques *Antithamnion* Naeg. [On the bromuques of *Antithamnion*.] Compt. Rend. Acad. Sci. [Paris] 181²⁵: 1041-1043. 1925.

8396. SCHILLER, J. Die planktonischen Vegetationen des Adriatischen Meeres. A. Die Coccolithophoriden-Vegetation in den Jahren 1911-14. [The planktonic flora of the Adriatic Sea. Coccolithophore-vegetation from 1911 to 1914.] Arch. Protistenk. 51: 1-130. 9 pl., 24 fig. 1925.—The methods used and the systematic position of these flagellates, together with their horizontal, vertical and seasonal distribution, are discussed. The following species are described, with figures: *Pontosphaera huxleyi* Lohm., *P. inermis* Lohm., *P. triangularis* Schiller, *P. ovalis* Schiller, *P. syracusana* Lohm., *P. discopora* n. sp., *P. Hartmanni* n. sp., *P. haeckeli* Lohm., *P. echinofera* Schiller, *P. pellucida* Lohm., *Scyphosphaera apsteinii* Lohm., *Lohmannosphaera adriatica* Schiller, *L. paucoscyphos* Schiller, *Syracosphaera tenuis* Lohm., *S. bifenestra* Schiller, *S. brandti* n. sp., *S. robusta* Lohm., *S. cordiformis* Schiller, *S. grundi* Schiller, *S. ovata* n. sp., *S. dentata* Lohm., *S. mediterranea* Lohm., *S. adriatica* Schiller, *S. pulchra* Lohm., *S. cupulifera* Schiller, *S. pseudoheptangularis* Schiller, *S. (?) radiata* n. sp., *S. corii* n. sp., *S. coronata* Schiller, *S. molischi* n. sp., *S. cornifera* Schiller, *S. quadricornu* n. sp., *Najadea gloriosa* Schiller, *Michaelsarsia splendens* Lohm., *M. falklandica* Lohm., *Halopappus adriaticus* Schiller, *H. quadribranchiatus* n. sp., *H. vahseli* Lohm., *Deutschlandia anthos*

Lohm., *Ophiaster formosus* Gran., *Calcioconus vitreus* n. gen. n. sp., *Calciosolenia murrayi* Gran., *C. grani* n. sp., *C. grani* var. *cyliandrothecaformis* n. var., *C. grani* var. *closterium* n. var., *Calyptrorphaera globosa* Lohm., *C. oblonga* Lohm., *C. sphaeroidea* Schiller, *C. sphaeroidea* var. *minor* Schiller, *C. incisa* Sch., *C. insignis* Sch., *C. dalmatica* Sch., *C. (?) pyriformis* Sch., *C. quadridentata* Sch., *C. uella* n. sp., *C. circumspicta* n. sp., *C. (?) mirabilis* n. sp., *Acanthoica acanthos* n. sp., *A. monospina* n. sp., *A. quathorospina* Lohm., *A. quathorospina* var. *brevispina* n. var., *A. acanthifera* Lohm., *A. janzeni* n. sp., *A. coronata* Lohm., *Coccolithophora leptopora* (Murr. et Blackm.) Lohm., *C. wallichi* Lohm., *C. fragilis* Lohm., *Discosphaera tubifer* (Murr. et Blackm.) Ostefeld, *Rhabdosphaera claviger* Murr. & Blackman, *R. tignifer* Sch., *R. hispida* Lohm., *R. tubulosa* n. sp., *R. stylifer* Lohm., *R. longistylis* n. sp., *R. (?) multistylis* n. sp., *Umbilicosphaera mirabilis* Lohm. The paper closes with a discussion of the morphology of the flagellates, the formation of coccoliths, cell-division, and a general consideration of the ecology of the group in the Adriatic Sea.—*R. P. Hall.*

8397. SCHMIDT, F. Morphologie und biologie der Melosira varians mit einen Beitrag zur Mikroporenfrage. [Morphology and biology of *M. varians*, with a note on microspores.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 11: 140–147. 1923.

8398. SCHMIDT, O. C. Index algarum marinum 1902–1923. Hedwigia 65: 11–27. 1924.

8399. SCHOENICHEN, WALTHER. Einfachste Lebensformen des Tier- und Pflanzenreiches. Naturgeschichte der mikroskopischen-Süsswasserbewohner. [Lowest forms of animal and plant kingdoms. Natural history of microscopical fresh water inhabitants.] 5th ed., Hugo Bermuhler Verlag: Berlin (1925?).

8400. SCHRÖDER, BRUNO. Phytoplankton aus dem Schlawa- und dem Grossen Tarnauer See. [Phytoplankton from Lake Schlawa and the Greater Lake Tarnau.] Internat. Rev. Ges. Hydrobiol. u. Hydrograph. 13: 341–344. 1925.—A list of species of Chlorophyceae, Bacillariaceae, Conjugatae, Schizophyceae, and Phaeophyceae found in samples from these lakes.—*Lowell E. Noland.*

8401. SCHULZ, P. Kurze Mitteilungen über Algenparasiten. [Notes on algal parasites.] Schriften Süsswasser- u. Meeresk. 1: 178–181. 1923.

8402. SCHUSSNIG, B. Die Kernteilung bei *Cladophora glomerata*. [Nuclear division in *Cladophora*.] Oesterreich. Bot. Zeitschr. 72: 199–222. 1923.

8403. SCHUTOFF, D. A. Materialien zur flora der Grünalgen des Wolgaplanktons. [Green algae of the Volga plankton.] Arbeit. Biol. Wolga-Stat. 8⁶: 215–232. 1922.

8404. SECKT, HANS. Estudios hidrobiológicos en la Argentina. [Hydrobiological studies in Argentina.] Schizophyceae. Bol. Acad. Nac. Cienc. Cordoba [Argentina] 25: 383–429. 47 fig. 1922.—After a brief introductory discussion on the occurrence and manner of life of the Schizophyceae and a short bibliography of the most important works dealing with their study, the author considers in detail those found in water near Buenos Aires, Argentina. Generic and specific descriptions are given, the occurrence of each species is stated, and each is illustrated. The following are proposed as new: *Anabaena bonariensis*, *A. platensis*, *A. solitaria tenuis*, *Cylindrospermum stagnale tenue*, *Homoeothrix minuta*, *Lyngbya bonariensis*, *L. platensis*, *Oscillatoria limosa tenuis*, and *Symploca dubia parvula*.—*F. W. Pennell.*

8405. SJÖSTEDT, L. GUNNAR. Algologiska studier vid Skånes södra och östra kust. [Algalogical studies of the south and east coast of Skåne.] (French summary.) Lunds Univ. Aarskrift 16⁷: 1–40. 2 fig. 1920.—The author has divided the algal flora into natural associations based on depth. Notes are given as to the relative abundance of the species under various conditions and their seasonal development. Lists of the algae found at various depth zones are followed by systematic notes on all the algae reported. *Cladophora cristata* (Roth.) Kg. is considered to be a finer form of *C. glomerata* (L.) Kg., and *C. marina* Hylmö to be better called *C. patens* Kg. The revision of *Monostroma balticum* (Aresch.) Wittr. is acknowledged and 2 figures of that species are added. J. G. Agardh's differentiation of *Prasiola stipitata* and *P. cornucopiae* is held to be uncalled for and the latter species is reduced to a form of *P. stipitata*. Under *Phyllophora brodiai*, f. *ligulata* and f. *angustissima* of C. Agardh are revived and substituted for the more confused f. *elongata* and f. *baltica* of Hauck. Accompanying the reduction in the salinity of the water of the Baltic coast is a general reduction in the size and fertility of the individual algae as compared with those of the more saline west coast. In

contrast to this general rule however, certain forms possess locally an unusual luxuriance in the fresher water, notably *Enteromorpha erecta*. The abundance of nitrogen appears to materially affect the vigor of the development of *Enteromorpha* and *Ulva*.—A. C. Hof.

8406. SKVORTZOW, B. W. On *Trachelomonas hispida* (Perty) Stein and its varieties. New Phytol 24: 299-305. 17 fig. 1925.—Descriptions of the species named and all its 16 known varieties are given, with each figured. Varieties *punctulosa*, *papillata*, *simplex*, *hyalina*, *spinulosa*, *spinopunctulosa* (all Skvortzow) are described as new. A new combination is *T. hispida* var. *charkowiensis* (Swirenko) Skvortzow.—I. F. Lewis.

8407. SKVORTZOW, B. W. Über einige Süßwasseralgen der Umgegend von Peking (China). [Freshwater algae of Peking.] Arch. Hydrobiol. 16: 337-340. 1925.

8408. SKVORTZOW, B. W. Über neue und wenig bekante Formen der Euglenaceengattung *Trachelomonas* Ehrb. [New and little known *Trachelomonads* (Euglenaceae).] Ber. Deutsch. Bot. Ges. 43: 306-315. 1925.

8409. SPRENGER, E. *Asterionella gracillima* (Hantzsch.) Heib. in Grossteich bei Hirschberg in Böhmen. [A. *gracillima* in the Great Lake at Hirschberg, Bohemia.] Arch. Protistenk. 52: 170-184. 1925.—This is a quantitative survey of *Asterionella* during the year 1921, compared with less complete observations for the years 1908 to 1910.—R. P. Hall.

8410. STEINECKE, F. Der Stammbaum der Algen nach sero-diagnostischen Untersuchungen dargestellt. [The evolutionary tree of the algae established by sero-diagnostic researches.] Bot. Arch. 10: 82-205. 1925.

8411. STEINECKE, F. Serodiagnostik und der Stammbaum der Pflanzen. [Serodiagnosics and the phylogeny of plants.] Ostdeutsche Naturwart. 2: 1. 1925.

8412. STEINECKE, F. Zur Polarität von Bryopsis. [Polarity of Bryopsis.] Bot. Archiv 12: 97-118. 1925.

8413. STEINECKE, F., UND E. LINDEMANN. Die Mikroflora des Zwergbirkenmoors von Neulinum. [Mikroflora of the dwarf birch swamp in Neulinum.] Schriften Süßwasser- u. Meeresk. 2: 3-4. 1923.

8414. STEINER, H. Vergleichende Studien über die horizontale und vertikale Verteilung des Phytoplanktons in Zürich-See, mit zwei graphische Darstellungen im Text. [Comparative studies on the horizontal and vertical distribution of the phytoplankton in Lake Zürich.] Veröf. Geobot. Inst. Rübel Zürich 3: 459-476. 1925.

8415. SVARTCHEVSKI, B. [Observations on *Oicomonas tetraspora* n. sp.] Arch. Soc. Russe Protistol. 2: 1-18. 1923.

8416. TROITZKAIA, O. V. Action de la lumière sur l'*Oscillatoria Agardhii* Gomi. [Action of light on *O. agardhii*.] Bull. Soc. Bot. Russe 6: 121-136. 1923.

8417. TROITZKAIA, O. V. [The Systematic significance of *Urogleriopsis apiculata*.] Notulae Systematicae Inst. Crypt. Hort. Bot. Reipub. Rossicae 3^o: 81-84. 1924.

8418. USPENSKI, E. E., AND W. J. USPENSKAJA. Reinkultur und ungeschlechtliche Fortpflanzung des *Volvox globator* in einer synthetischen Nährlösung. [Pure culture and asexual reproduction of *V. globator* in a synthetic nutrient solution.] Zeitschr. Bot. 17: 273-308. 1925.

8419. UTERMÖHL, H. Bitte um Mitteilung von Fundortsangaben des *Centronella Reichelti*. [Localities for *C. reichelti*.] Schriften Süßwasser- u. Meeresk. 1: 52-54. 1923.

8420. UTERMÖHL, H. Das Nannoplankton Ostholsteinischer Seen. [The nanoplankton of East Holstein lakes.] Verhandl. Internat. Verein. Limnol. 1: 86-92. 1923.

8421. UTERMÖHL, H. Einige Bemerkungen über Formenkreis von *Gymnodinium mirabile* Penard. [The form cycle of *G. mirabile*.] Schriften Süßwasser- u. Meeresk. 1: 3-6. 1923.

8422. UERMÖHL, HANS. Limnologische Planktonstudien. [Limnological plankton studies.] Arch. Hydrobiol. u. Planktonk. (Suppl.) 5: 1-527. 1925.

8423. UTERMÖHL, H. Tiefenwanderung bei *Volvox*. [Depth distribution of *Volvox*.] Schriften Süßwasser- u. Meeresk. 2: 260-270. 1924.

8424. VAN OYE, PAUL. Note sur l'*Euglena acus* Ehrenberg. Bull. Soc. Roy. Bot. Belgique 2^e Sér. 56: 124-133. 4 fig. 1924.

8425. VILHELM, J. Nouveau Chara d'eau thermale et radioactive des bains de Pišt'any en Slovaquie. [A new Chara of radioactive hot water of the baths at Pišt'any in Slovakia.] Bull. Internat. Acad. Sci. Bohême. 1923: (1-3). 1923.

8426. VILHELM, J. *Novae species et formae Characearum. I. Characeae bohemicae.* Hedwigia 64: 148-163. 1923.—The author publishes a list of 45 diagnoses of species and technical forms of Charas studied by him, and describes several new forms from his rich collections, as well as discusses the geographical distribution of the species and forms. The new species are: *Chara hippelliana* Vilh., *C. bohemica* Vilh., *C. pannonica* Vilh. subsp. *Charae intermediae*. New forms for the following species are described: *Nitella opaca* (1), *N. flexilis* (1), *Chara contritaria* (5), *C. pannonica* (1) *C. gymnophylla* (1), *C. foetida* (23), *C. aspera* (1), *C. fragilis* (9).—From abst. in *Preslia* (transl.).

8427. VILHELM, J. *První příspěvek k poznání variability parožnatek ze Slovenska.* [A first contribution to knowledge of the charophytes of Slovakia.] Mem. Soc. Roy. Sci. Bohême II. Cl. Prague, 1923: 1-11. 1923.—The slavic charophytes and the range of their variations are little known at present. *Chara contritaria* and *C. foetida* are wide-spread because of their capacity of adapting themselves to diverse edaphic conditions, and this is perhaps why their variability is so great. Among the forms of *C. contritaria* there are found in Slovakia: f. *brachyphylla* Vilh., f. *turfosa* Vilh., f. *pseudofoetida* n. f., f. *pulvinata* n. f.; and of *C. foetida*, the commonest species, f. *turfosa* Vilh., f. *bohemica* Vilh., f. *tennuis* Vilh., f. *longibracteata* Vilh., f. *pseudocondensata* Vilh., f. *brachyphylla* Mig., f. *atosperma* n. f. Among other species there is found *C. fragilis* in the normal form and a new species (discussed elsewhere) in a hot-water reservoir at Píšťany.—From abst. in *Preslia* (transl.).

8428. VILHELM, J. *Resultats de l'exploration des Characées de la Tchécoslovaquie.* [Characeae of Czecho-Slovakia.] Vestník [Prague] 1923: 55-56. 1923.

8429. VODIANITZKAIA-MOROZOVA, N. V. [Description of the genus *Pediastrum*.] Trav. Sta. Biol. Novorossiisk 9. 1-30. 1923.

8430. VORONICHIN, N. W. *Materiaux pour la flore des algues d'eau douce du Caucase.* IX. [Fresh water algae of the Caucasus.] Russische Hydrobiol. Zeitschr. 3: 20-23. 1923.

8431. WILLER, A. *Variationsformen von Cocconeis placentula* Ehrbg. [Variations of *C. placentula*.] Schriften Süßwasser- u. Meeresk. 1: 155-158. 16 fig. 1923.

8432. WILLIAMS, MAY M. *Contributions to the cytology and phylogeny of the Siphonaceous Algae 1. The cytology of the gametangia of Codium tomentosum* (Stackh.). Proc. Linn. Soc. New South Wales 50²: 98-111. 42 fig. 1925.

8433. YAMADA, Y. *Studien über die meeresalgen von der Insel Formosa. I. [Marine algae from Formosa I.] Chlorophyceae.* Bot. Mag. Tokyo 39: 77-95. 1925.

8434. ZIMMERMANN, WALTER. *Die ungeschlechtliche Entwicklung von Volvox.* [The asexual development of *Volvox*.] Naturwissenschaften 13: 397-402. 3 fig. 1925.

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

ALEXANDER W. EVANS, *Editor*

(See also in this issue Entries 6226, 6235, 6495, 6601, 6620, 6639, 6690, 6699, 8581, 8685, 9128, 9205, 9373, 9466, 9500)

8435. ANONYMOUS. *Ingham collection of mosses.* Jour. Botany 63: 370-371. 1925.—The William Ingham collection of British mosses, which contains 12,000 specimens, has been given to the University of Leeds and placed in charge of W. H. Burrell. The collection includes a large representation of harpidioid Hypna, a comprehensive series of Sphagna, and many vouchers for county records.—A. W. Evans.

8436. ANONYMOUS. *Ingham collection of mosses.* New Phytol. 24: 312. 1925.

8437. ANONYMOUS. [Rev. of: HERZOG, TH. *Anatomie der Lebermoose.* [Anatomy of the liverworts.] In: LINSBAUER, K. *Handbuch der Pflanzenanatomie* 7: 1-112. 93 fig. 1925.—(See Bot. Absts. 15, Entry 3778.) Nature 116: 10. 1925.—The reviewer notes that some important work by American writers is not discussed and that no mention is made of mycorrhiza.—O. A. Stevens.

8438. AMANN, J. *Étude bryométrique du Fissidens Monguilloni Thér.* [A bryometric study of *F. monguilloni*.] Rev. Bryologique 52: 50-52. 1925.—The author tabulates the cellular indices obtained from 5 specimens of *Fissidens Monguilloni* collected by Potier de la

Varde in various parts of France and compares his results with those obtained in an earlier study (See Bot. Absts. 12, Entry 570). He also tabulates the pH values 7.0-7.2 for the substrata of these specimens.—A. W. Evans.

8439. AMANN, J. La réaction du substrat des mousses et l'évaluation microchimique du pH. [The reaction of the substratum of mosses and the microchemical determination of pH.] Rev. Bryologique 52: 49-50. 1925.—A method is described for testing the reaction of the substratum on a slide by means of an indicator. A particle of the substratum from either fresh or dried material is pulverized in a drop of neutral distilled water, covered with a cover-glass, and brought to the boiling-point. After cooling, a drop of the indicator is placed at the edge of the cover-glass, and the color of the zone of contact between the preparation and the indicator is observed under the microscope. By comparing this color with the colors obtained by means of standard solutions an approximate value of pH is determined.—A. W. Evans.

8440. ANDREWS, F. M. An abnormal archegonium of *Funaria hygrometrica*. Bot. Gaz. 80: 337. 1 fig. 1925.—The author describes an archegonium of the moss, *Funaria hygrometrica*, with 2 eggs and 2 rows of canal-cells, 1 of the rows being shorter than the other.—B. W. Wells.

8441. ARMITAGE, ELEANORA. Annual meeting of the British Bryological Society, 1924. Bryologist 28: 22-24. 1925.—The meeting was held at Llanberis, Carnarvonshire, Wales. During the excursions in the region, *Grimmia andraeoides* Lampr. was added to the British flora, *G. elongata* Kaulf. to the flora of Wales. Some 11 mosses and 7 hepatics, rare but previously known in the flora, are listed.—A. M. Taylor.

8442. BLOMQUIST, H. L. Some of the hepatics of North Carolina. (From Proc. N. C. Acad. Sci.) Jour. Elisha Mitchell Sci. Soc. 39: 11-12. 1923.—From North Carolina, 39 genera are reported, the rarest species being *Metzgeria furcata* var. *ulvula*.—W. C. Coker.

8443. CAMPO N., JOSÉ A. Pequeño catálogo briológico de Mariluán. [Bryological catalogue of Mariluán.] Rev. Chilena Hist. Nat. 25: 507-510. 1921.—A list, accompanied by information of habitat, is given of Bryophyta observed in the Department of Mariluán, Chile.—F. W. Pennell.

8444. CONKLIN, GEORGE H. Report of the curator of the hepatic herbarium of the Sullivant Moss Society for 1924. Bryologist 28: 13-14. 1925.—Twenty-four species of hepatics are mentioned. These have been sent in during the year from regions of the U. S. A. hitherto outside of the known range of these species.—A. M. Taylor.

8445. COSTES, NATHANIEL. Nomenclatura de los principales musgos de la Hoya de Marga-Marga (Quilpué, Provincia de Valpariso). [Catalogue of the principal mosses of Hoya de Marga-Marga (Valpariso).] Rev. Chilena Hist. Nat. 25: 130-132. 1921.—The author lists the more important bryophytes of Marga-Marga, a mountainous region near Quilpué in the Province of Valpariso, Chile. The species and varieties recognized number 80, 17 of which are hepatics.—Brother Claude Joseph.

8446. DISMIER, G. Observations sur l'*Orthotrichum Shawii*. [Notes on *O. shawii*.] Rev. Bryologique 52: 33-35. 1925.—The author notes his earlier discovery of the rare *Orthotrichum shawii* in France (see Bot. Absts. 12, Entry 6485) and reports the species from a new French locality in the Department of Ardèche. He considers the species perfectly valid, in spite of the dissenting views of certain writers, and enumerates its distinctive features. At the close of the paper he lists the 5 stations where *O. shawii* has been collected. These include the type-locality in Scotland, 1 station in Germany and 1 in Corsica, as well as the 2 French stations.—A. W. Evans.

8447. DIXON, H. N. Moss remains in Russian peat. Jour. Botany. 63: 370. 1925.—The author calls attention to 2 reports on plant-remains in Russian peat-bogs by W. S. Docutrowsky and gives a list of 9 mosses, contributed by the same authority, from new localities.—A. W. Evans.

8448. DIXON, H. N. Mosses from the Mt. Everest Expedition, 1924. Jour. Botany 63: 221-222. 1925.—The collection here reported was made by T. H. Somerville and contains only 2 species: *Grimmia Somervillii* Dixon, proposed as new, from altitudes of 16000-17500 feet; and *Aongstroemia julacea* (Hook.) Mitt., from an altitude of 19,800 feet, "by far the highest limit from which any moss has hitherto been collected." The 2nd species, so far as known, is re-

stricted to high mountains and has been found also in the Andes of Ecuador and Colombia and in Natal.—A. W. Evans.

8449. DIXON, H. N., AND W. E. NICHOLSON. *New British bryophytes*. Jour. Botany 63: 125-130. 1925.—The paper is divided into 2 parts, the 1st devoted to mosses and the 2nd to hepatics. The mosses reported as new to the British Isles are *Grimmia andreaeoides* Limpr. on Snowdon in 1924, and *Webera calcarea* Warnst., near Lewes. The hepatics reported as new are the following: *Cephalozia compacta* Warnst., Yorkshire; *Fossombronía Loitlesbergeri* Schiffn., West Cornwall; and *Gongylanthus ericetorum* (Raddi) Nees, growing with the *Fossombronía*. Each species is discussed in detail and attention is called also to a gemmiparous form of *Lophocolea heterophylla* from Sussex and other localities.—A. W. Evans.

8450. DOUIN, CH. *La théorie des initiales chez les Hépatiques à feuilles*. [The theory of initials in the leafy Hepaticae.] Bull. Soc. Bot. France 72: 565-592. 2 pl. 1925.

8451. DOUIN, C. *Recherches sur le gamétophyte des Marchantiées. Le capitule du Marchantia polymorpha expliqué*. [Studies on the gametophyte of the Marchantiales. The receptacle of Marchantia polymorpha explained.] Rev. Gén. Bot. 37: 481-496. 1925.—In the normal and well-developed receptacle of *Marchantia polymorpha* there occur 16 radial thalli, 8 involueral thalli and at least 10 fructiferous thalli in each of the 8 involucre, making a total of more than 100 thalli.—J. C. Gilman.

8452. ELSSMANN, EMIL. *Studien über wasserbewohnende Laubmoose*. [Studies on aquatic mosses.] Hedwigia 64: 52-145. 55 fig. 1923.

8453. FRÉMY, P. *Musciniées des environs de Saint-Lô (Manche)*. [Bryophytes of the vicinity of Saint-Lô.] Not. Mém. et Doc. Soc. Agric. Archéol. et Hist. Nat. Manche 36: (1-32). 7 fig. 1925.—The author reviews the literature on the bryophytes of the Department of the Manche, France, and shows that the vicinity of Saint-Lô has heretofore been less studied than many other localities there. He enumerates 177 species for this region, including 60 pleurocarpous mosses, 82 acrocarpous mosses, 3 peat mosses, 17 leafy hepatics, and 15 thallose hepatics. Under each species full data are given regarding habitats, and a few critical notes are interpolated. The figures illustrate certain species of *Drepanocladus*.—A. W. Evans.

8454. GAISBERG, E. V., AND E. FINCKH. *Zur Biologie von Schistostega osmundacea*. [The biology of *S. osmundacea*.] Introduction by K. GOEBEL. Flora 120: 143-175. 4 fig. 1925.—The introduction discusses the conditions under which the luminous protonema of *Schistostega osmundacea* is produced, absorption of water by the leafy stems, arrangement of leaves, and avoidance of calcareous habitats. In the body of the paper the authors discuss the occurrence of this moss in the Black Forest of Germany and describe several of its stations in detail. In the case of a station near Höfen a. Enz, frequent observations were made on the plants between August 31, 1921, and September 25, 1922, variations in temperature being also taken into account. It is shown that the luminous protonema is suppressed by frost and by the appearance of the leafy stem, the time of the most luxuriant development being the end of May and the entire month of June. Although a certain amount of moisture is necessary for growth, the plants grow only in places protected from the rain. The authors investigated the development of the capsule, the processes of dehiscence and spore-discharge, the reaction of the moss to desiccation, and the effect of direct sunlight on development of the leafy stems. The final section of the paper considers the branching of the leafy stem, the conclusion being drawn that branching is adventive in nature and brought about by inhibition of the activities of the apical cell of the main axis.—A. W. Evans.

8455. GARDET, [G.] [Notes.] Rev. Bryologique 52: 35-37. 1925.—The author comments on the occurrence of fruiting *Pleuroschisma trilobatum* (L.) Dum. in the Vosges Mountains, France (see also Bot. Absts. 14, Entry 8987), on a new station for *Schistostega osmundacea* W. & M. in the same general region, and on his discovery of *Cololejeunea calcarea* (Lib.) Spr. and *Conomitrium Julianum* Mont. in the Department of Meurthe-et-Moselle (see also Bot. Absts. 15, Entry 5128).—A. W. Evans.

8456. GERSTNER, P. J. J. *Vergleichende Studien über Laubmossgeschlechterstände*. [Comparative studies on the inflorescences of mosses.] Hedwigia 55: 109-146. 1925.

8457. GUIMÁRES, ANTÓNIO LUÍS MACHADO. *Sinopse das Briófitas de Portugal*. [Synopsis of the bryophytes of Portugal.] Bol. Soc. Broteriana II. 3: (1-91). 1925.—This gives a

synopsis of the Hepaticae of Portugal, with keys for the determination of the orders, families, genera, and species. Under the order Marchantiales the following families are included: Ricciaceae (3 genera, 20 species); Corsiniaceae (1 genus, 1 species); Marchantiaceae (7 genera, 9 species); and Targioniaceae (1 genus, 1 species). Under the Jungermanniales Anakrogynae, the following: Sphaerocarpaceae (1 genus, 2 species); Aneuraceae (1 genus, 5 species); Metzgeriaceae (1 genus, 1 species); Pallaviciniaceae (1 genus, 1 species); Pelliaceae (1 genus, 2 species); and Fossombroniaceae (1 genus, 3 species). Under the Jungermanniales Akrogynae, the following: Lophoziaceae (12 genera, 31 species); Cephaloziaceae (4 genera, 12 species); Ptilidiaceae (1 genus, 1 species); Scapaniaceae (2 genera, 9 species); Radulaceae (1 genus, 4 species); Madothecaceae (1 genus, 4 species); Frullaniaceae (1 genus, 3 species); and Lejeuneaceae (5 genera, 6 species). Under the Anthocerotales, the single family Anthocerotaceae (1 genus, 5 species). The genera recognized total 45, and the species 120. Under each species a brief description, an account of the habitat, a list of Portuguese stations with collectors, and critical remarks are given. No new forms are proposed.—A. W. Evans.

8458. HÄSSLER, ARNE. *Pterogophyllum lucens*, en atlantisk typ i Skandinavien moss flora. [*Pterogophyllum lucens*, an Atlantic type in the Scandinavian moss flora.] Bot. Notiser 1924: 457-462. Map. 1924.—The author shows (map) the known distribution of *Pterogophyllum lucens* (L.) Brid. in Scandinavia. The species is abundant in the southwestern part of Norway, especially along the coast, but occurs also in the southwestern part of Sweden and on the Danish island of Bornholm.—A. W. Evans.

8459. HÄSSLER, ARNE. Till kännedomen om *Webera sessilis* utbredning i Sverige. [Distribution of *Webera sessilis* in Sweden.] Bot. Notiser 1924: 179-188. Map. 1924.—The author discusses the distribution of *Webera sessilis* (Schmid.) Lindb. in Sweden, indicating the known stations (map). He shows that the species is especially abundant in the southwestern portions of the country but that its range extends well up into the North.—A. W. Evans.

8460. HENNEN, J. À propos de *Desmatodon cernuus* Br. Eur. Bull. Soc. Roy. Bot. Belgique II. 56: 164-165. 1924.

8461. KASHYAP, SHIV RAM, AND NAND LAL DUTT. Two Indian species of *Notothylas*. Proc. Lahore Phil. Soc. 4: 49-56. 1 pl. 1923.—The authors note that the genus *Notothylas* is represented in India by 2 species: *N. indica* Kashyap, proposed as new, and *N. Levieri* Schiffn. They describe the thallus and sporogonium of *N. indica* in detail, contrasting the species with *N. levieri*, and illustrate the distinctive features. *N. indica* is a species of low altitudes; it is based on material from Dehra Dun and Allahabad but probably occurs also at Bombay. *N. levieri* is a hill species and is known from Mussorie and Simla.—A. W. Evans

8462. LEE, W. A. Irish sphagna. Irish Naturalist 33: 98. 1924.

8463. LORCH, WILHELM. Über der Haustorialschläuche am Fusse der Laubmoose. [Haustorial outgrowths of the foot in mosses.] Ber. Deutsch. Bot. Ges. 43: 262-270. 4 fig. 1925.—The author shows that the foot of the moss sporophyte produces haustorial outgrowths, or rhizoids, in comparatively few species. Previous to his researches they had been definitely demonstrated in only 3 genera: *Buxbaumia*, *Diphyscium*, and *Eriopus*. He shows, however, that they occur also in *Bryum* and several allied genera. Where they occur the foot is bounded on the outside by a jacket of thick-walled cells and the rhizoids represent thin-walled outgrowths of the cells of the peripheral layer. In *Bryum caespiticium*, the rhizoids form a compact but irregular layer, and their tips fit in among the cells lining the vaginule, being firmly attached to them. There is therefore no indication of a space filled with slime between the foot and the vaginule, a feature characteristic of most mosses. The walls of the rhizoids and the adjacent walls of the vaginule show characteristic deposits penetrated by fine cytoplasmic strands (see following entry).—A. W. Evans.

8464. LORCH, WILHELM. Über die Saugzellen im Fusse und in der Vaginula bei den Laubmossen. [Absorbing cells of the foot and vaginule in mosses.] Ber. Deutsch. Bot. Ges. 43: 120-127. 4 fig. 1925.—The author notes that the foot of the moss sporophyte acts not only as an absorbing organ but also as a haustorium. At the surface of the foot in the Polytrichaceae several layers of cells form a deposit on the walls, through which delicate strands of cytoplasm extend. This deposit is thickest on the outer tangential walls. In other mosses, such as *Dicranum undulatum*, *Mnium punctatum*, *M. subglobosum*, *Philonotis calcarea*, and

Tayloria serrata, the deposit is restricted to the outer tangential walls of the peripheral layer of the foot. In the Polytricaceae the cells lining the vaginule and 1-2 layers of adjoining cells have their walls strongly thickened but show no indication of the deposit found in the cells of the foot. In the other mosses, however, cells with deposits line the vaginule, and in these the deposit tends to be even thicker than in the foot. The chemical nature of the deposit is not altogether clear.—A. W. Evans.

8465. MATHUR, L. N. On a Lahore moss. Jour. Indian Bot. Soc. 4: 287-297. 5 pl. 1925.—*Trematodon brevicalyx* H. N. Dixon n. sp. is a small autoecious moss growing abundantly on damp earth during December to March. Bulbils appear on the rhizoids late in February. Detailed descriptions of the moss and of the sporophyte anatomy are given.—Winfield Dudgeon.

8466. MEDELIUS, S. Några anmärkningsvärda mossfynd i Skåne. [Some remarkable mosses in Scania (Sweden).] Svensk. Bot. Tidskr. 19: 524. 1925.—*Dicranum blyttii*, *Martinellia scandica*, *Plagiothecium striatellum*, and *Sporolepera palustris* are reported.—O. Heilborn.

8467. MEGAW, W. K. Mosses of Rathlin Island. Irish Naturalist 33: 144. 1924.

8468. MESLIN, ROGER. Quelques raretés bryologiques des Landes de Lessay (Manche). [Some bryological rarities of Landes de Lessay (Manche).] Bull. Soc. Linn. Normandie VII. 8: 14-25. 1925.—The author discusses the following 3 bryophytes from the Department of the Manche, France, and gives extended notes on their distribution in French territory: *Aneura latifrons* Lindb., *Bryum neodamense* Itzigs. (new to Normandy), and *Cephalozia francisci* (Hook.) Dum.—A. W. Evans.

8469. MEYLAN, C. Notes sur quelques espèces de mousses. [Notes on certain species of mosses.] Rev. Bryologique 52: 52-54. 1925.—The author calls attention to 3 interesting mosses of Switzerland: *Dicranum* sp., closely resembling *D. Bonjeani* var. *juniperifolium*; a new form of *Tortula ruralis*; and the rare *Orthotrichum shawii*.—A. W. Evans.

8470. MOTTE, JEAN. Sur une formule permettant de calculer le nombre de générations au cours de l'évolution du tissu spermogène des mousses. [A formula for calculating the number of generations during the development of the spermogenous tissue of mosses.] Compt. Rend. Soc. Biol. 93: 1484-1485. 1925.—It is computed that, if n is the number of generations, a the number of initial spermatogenic cells and, M the ratio of the length of the antheridium (L) to its diameter (D), then
$$n = \frac{\log [\pi D^3 (3M-L)] - \log 12a}{\log 2}.$$
 In *Mnium spinosum*, for

which this has been especially developed, there are thus found to be 9 generations between the initial spermatogenic cells and the antherozoids.—Oran Raber.

8471. NEGRI, G. Contributo alla briologia della Cirenaica. [Contribution to the bryology of Cirenaica.] Atti R. Accad. Sci. Torino 57: 318. 1921-1922.—The author catalogs 52 species of acrocarpous and pleurocarpous mosses collected in different parts of Cirenaica and determined by him.—Felice Gioelli (transl. by J. M. Fogg, Jr.).

8472. NICOLAS, G. Nouvelle station de *Plagiochasma rupestre* (Forster) Stephani. [New station for *P. rupestre*.] Feuille Nat. 1925¹⁰: 140. 1925.

8473. NICOLAS, G. Nouvelles stations de *L. cruciata* (L.) Dumortier fructifères. [New stations for fruiting *L. cruciata*.] Feuille Nat. 1925¹²: 31. 1925.

8474. NICOLAS, G. Remarques biologiques sur le *Lunularia cruciata* (L.) Dumortier. Les formations mycorhiziques des Marchantiacees. [Biological notes on *L. cruciata*. Mycorrhizal structures in the Marchantiaceae.] Feuille Nat. 1925⁵: 76-81. 1925.

8475. PANDE, S. K. Notes on the morphology and biology of *Riccia sanguinea* Kash. Jour. Indian Bot. Soc. 4: 117-128. 5 pl. 1924.—*Riccia sanguinea* is common in northern India on damp banks, September to March. It is dioecious; female plants usually are larger (up to 3.5 cm. in diameter) and more compact; male plants commonly are red. Plants grown under blue, red, green, and colorless glass produced only green new parts; no other distinctive effect was observed. Plants grown under dripping water formed very narrow thallus lobes. Plants grown in darkness soon dried, but showed no etiolation. Spores germinate through a pore opposite the triradiate crack, and growth proceeds as usual for *Riccia*. Some sporelings grown under blue glass produced new thalli from enlarged cells of the original thallus, sometimes

repeating the process. The mature thallus has the usual organization. No conclusion was reached concerning the method of formation of air spaces. The thallus bears no ventral scales, and only smooth-walled rhizoids. Development and structure of sex organs, spermatogenesis, development of the sporophyte, and sporogenesis are as described in literature for other species. The first wall in the germinating zygote is oblique to the archegonium.—*Winfield Dudgeon*.

8476. PERSSON, JOHN. En för Sverige ny moss. [A moss new to Sweden.] *Bot. Notiser* 1925: 419-420. 1925.—The author reports *Nanomitrium tenerum* (Bruch) Lindb. from several localities in the southernmost part of Sweden.—*A. W. Evans*.

8477. PODPĚRA, J. Die von mir auf der dritten I. P. E. gesammelten Bryophyten. [Bryophytes collected by myself on the 3rd I. P. E.] *Veröffentl. Geobot. Inst. Rübel* 1: 238-260. 1924.

8478. PODPĚRA, JOSEF. Výsledky bryologického výzkumu Moravy za leta 1913-1922. [Report on the bryological explorations in Moravia during the years 1913-1922.] *Zvl. ot ze Sborn. Klubu Přírodov. v Brně* 1922: Nákl. Kl. Přír. 1-29. 1923.—The bryological explorations, upon which the present report is based, were made by the author and other Czechoslovakian botanists in various parts of Moravia. The species enumerated number 291 and include 57 Hepaticae and 234 Musci. Full data regarding stations are given under each species, variety and form, and numerous critical notes are interspersed. Many varieties and forms among the Musci are proposed as new, the varieties being as follows: *Acrocladium cuspidatum* var. *maius*, *Anomodon longifolius* var. *depauperatus*, *Barbula Hornschuchiana* var. *incrassata*, *Brachythecium glareosum* var. *robustum*, *B. populeum* var. *revolutum*, *Campyllum stellatum* var. *gracilius*, *Cirriphyllum Vaucheri* var. *attenuatum*, *C. velutinoides* var. *exiguum*, *Didymodon tophaceus* var. *glaucus* (based on *D. glaucus* Ryan), *Drepanocladus exannulatus* var. *robustus*, *Hygrohypnum ochraceum* var. *triste*, *Leptodictyum trichopodium* vars. *attenuatum* and *gracile*, *Leskea paludosa* var. *gracilis*, *Stereodon reptilis* var. *myurus*, *Thuidium Philiberti* var. *pseudotamarisci* (based on *T. pseudotamarisci* Limpr.), *Tortula ruralis* var. *aciphylloides*, and *Trichostomum cylindricum* var. *asperum*.—*A. W. Evans*.

8479. POTIER DE LA VARDE, R. À propos de l'*Ectropothecium mayumbense* Besch. *Rev. Bryologique* 52: 43-44. 1925.—The type-specimen of *Ectropothecium mayumbense* Besch., collected by Thollon in the Mayumbe Forest, near Brazzaville, in French Equatorial Africa, is a *Vesicularia*. The author notes, however, that a 2nd specimen in the Paris Museum, although determined by Bescherelle, is distinct from the type and should be referred to *E. brachycladulum* Broth. This specimen came from the Congo, no more definite locality being indicated.—*A. W. Evans*.

8480. POTIER DE LA VARDE, R. Nouvelles herborisations dans la Sud de l'Inde. [New botanical explorations in the south of India.] *Rev. Bryologique* 52: 37-43. 1925.—The author gives a preliminary report on a collection of mosses made by P. Foreau in the Madura District of southern India. His earlier reports on the mosses of this region have been abstracted (see *Bot. Absts.* 12, Entry 3385; 13, Entries 285, 3604, 5937). He here gives diagnoses of 14 new species of mosses, a list of 32 mosses reported for the 1st time from the region, and notes on the capsules of 4 species, originally described from incomplete material. The mosses proposed as new are the following: *Bartramia madurensis* Dix. & P. de la V., *Bryum pachycladum* Card., *Campylopus laetus* var. *madurensis* Thér. & P. de la V., *Clastobryella gracilis* P. de la V., *Dicranodontium perviride* Dix. & P. de la V., *Distichophyllum madurensis* Thér. & P. de la V., *Ectropothecium drepanocladoides* Broth. & P. de la V., *Fissidens ceylonensis* var. *acutifolius* Dix. & P. de la V., *Jaegerina stolonifera* var. *incrassata* P. de la V., *Juratzkaea indica* Broth. & P. de la V., *Macromitrium Schmidii* var. *laxirete* Thér. & P. de la V., *Pinnatella Foreauana* Thér. & P. de la V., *Pterobryopsis denudata* var. *robusta* P. de la V., and *Trachyphyllum elongatum* Dix. & P. de la V.—*A. W. Evans*.

8481. POTIER DE LA VARDE, R., ET ROGER MESLIN. Une Marchantiacee nouvelle pour la Manche: *Preissia commutata* (Lindenb.) Nees. [Preissia commutata, one of the Marchantiaceae, new to the Manche.] *Bull. Soc. Linn. Normandie* VII. 8: 90*-92*. 1925.—The authors report their discovery of *Preissia commutata*, a species new to the Department of the Manche, France, between Haye-du-Puits and Saint-Saveur-le-Vicomte. They give a list of

14 bryophytes and 26 phanerogams associated with the Preissia and discuss the distribution of the species in the other departments of France.—A. W. Evans.

8482. SCHRATZ, EDUARD. Vergleichende Untersuchungen an uni- und bivalenten Laubmoosen, nebst einem Anhang: Studien über die Natur der bisquitförmigen Stadien der Chloroplasten. [Comparative investigations on uni- and bivalent mosses, together with an appendix: Studies on the nature of the bisquit-form stages of chloroplasts.] Biol. Zentralbl. 44: 593-623. 8 fig. 1924.

8483. THÉRIOT, I. Contribution à la flore bryologique du Chili. [Contribution to the bryological flora of Chile.] IV. Rev. Chilena Hist. Nat. 25: 289-312. 5 pl. 1921.—Identifications of many Bryophyta sent to the author by various Chilean correspondants are reported. Among these are the following new species: *Barbula costesii*, *Brachysteleum deltori*, *Fissidens costesii*, *Funaria costesii*, *Orthotrichum bicolor*, *Pentastichella jaffueli*, *Tortula atrata*, *T. costesii*, and *Zygodon jaffueli*.—F. W. Pennell.

8484. THÉRIOT, I. Contribution à la flore bryologique du Chili. [Contribution to the bryological flora of Chile.] VI. Rev. Chilena Hist. Nat. 28: 129-139. 5 fig. 1924.—Notes are presented on various Bryophyta from Chile, including the following new species and varieties: *Amblystegium jaffueli*, *Dicranoloma menziesii chilense*, *Didymodon reflexus*, *Drepanocladus kneiffii chilense*, *Fabronia andina jaffueli*, *Funaria clavellata chilensis*, *Leptodon simithii longirepens*, *Mniobryum aspillagae*, *Oligotrichum laevifolium*, *Pentastichella pentasticha strictifolia*, *Perotrichum chilense*, *Rhodobryum chilense*, and *Sciaromium pachyloma brevifolia*.—F. W. Pennell.

8485. THÉRIOT, I. Contribution à la flore bryologique du Chili. [Contribution to the bryological flora of Chile.] VII. Rev. Chilena Hist. Nat. 29: 287-292. 1 pl. 1925.—First are enumerated some mosses collected at Temuco, Chile, in 1925, by C. E. Porter, among which is *Brachymenium porteri* Thér. n. sp. Then follow observations on 2 other Chilean mosses: *Campylopus leptodus* Mont. and *Distichophyllum molle* Besch.—F. W. Pennell.

8486. VAN DEN BROECK, M. Catalogue des plantes [Hepaticae] observées dans les environs d'Anvers. IV^e supplement. Bull. Soc. Roy. Bot. Belgique (2^e Série) 56: 28-32. 1924.

8487. VILHELM, JAN. Bryologická vegetace Rudohoří štávnického na Slovensku. [Mosses of Štávnické Rudohorí (Slovakia).]—Veda Prirodni 1924: 77-79, 134-136, 168-169. 1924.

8488. VILHELM, JAN. Nové druhy mechů děrkavovitých v Čechách. [Species of Grimmiaceae new to Czechoslovakia.] Časop. Nár. Mus. 1924: 28-41. 1 fig. 1924.—The following Grimmiaceae, new to Czechoslovakia, are described: *Grimmia apiculata* Hornsch., *G. arenaria* subsp. *Donnianae* Dixon, *G. sessitana* De Not., *G. subsulcata* Limpr., *Schistidium brunnescens* Limpr., *S. Domini* Vilh., *S. Podpěrae* Vilh., and *S. siluricum* Vilh.—From abst. in *Preslia* (Transl.).

8489. VILHELM, JAN. Variabilita rodu *Grimmia* v Československu. [Variability of the genus *Grimmia* in Czechoslovakia.] Vestn. Král. Čes. Spol. Nauk. 2: 1-47. 1924.—The author cites the following species of *Grimmia* as additions to the flora of Czechoslovakia: *G. arenaria*, *G. apiculata*, *G. Holleri*, *G. sessitana*, *G. subsulcata*, and *G. unicolor*.—From abst. in *Preslia* (transl.).

8490. WATSON, W. The bryophytes and lichens of arctic-alpine vegetation. Jour. Ecol. 13: 1-26. 1925.

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA, AND MYXOMYCETES

H. M. FITZPATRICK, *Editor*

J. E. FLYNN, *Assistant Editor*

(See also in this issue Entries 6178, 6234, 6272, 6315, 6339, 6538, 6556, 6557, 6573, 6597, 6601, 6639, 6651, 7265, 7407, 7426, 7522, 7554, 7633, 7857, 8344, 8688, 8700, 8708, 8712, 8738, 8739, 8782, 9049, 9083, 9099, 9109, 9128, 9229, 9230, 9255, 9256, 9259, 9388, 9400, 9423, 9456, 9533, 9552)

FUNGI

8491. [ANONYMOUS]. Краткий обзор деятельности Московского Отделения Секции по Микологии и Фитопатологии при Русском Ботаническом Обществе [A brief review of the activities of the Moscow Division of the Mycological and Phytopathological Section of the Russian Bot. Soc., for 1920-21 and 1921-22.] Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Section Mycol. and Phytopath. Russian Bot. Soc.] 1: 135-141. 1923.—The Moscow Division was organized November 18, 1920, with 24 members of which 20 were present. During the 2 years 17 meetings were held at which 26 scientific papers and reports and 5 reviews were read; the lists of the papers presented and of the membership are given.—*C. D. Sherbakoff*.

8492. ANGELL, H. R. Oospore-like bodies of *Phytophthora infestans*. Rep. Quebec Soc. Protect. Plants 17: 79-81. 1 fig. 1925.—Cultures were made on laboratory media of *Phytophthora infestans* to determine the production of oospores. Oatmeal agar proved most satisfactory. Brown, oospore-like bodies were found abundantly after 6 weeks in culture, but antheridia were rare. Germination tests were negative. Freezing killed the organism in culture. Abundant production of oospore-like bodies was observed in liquid media.—*J. E. Machacek*.

8493. ARTHUR, JOSEPH CHARLES. (Uredinales) Additions and corrections. North Amer. Flora 7¹⁰: 669-732. 1925.—Continued corrections and additions to the Uredinaceae are given. These include new species or genera published by Arthur or other authors since the publication of this family in the North American Flora, as well as new synonyms, new host plants, newly discovered or associated stages, revised or emended keys and specific or generic concepts, etc. The following new combinations are published: *Milesia pycnographidis* (*Peridermium pycnographide* Bell), *Melampsoropsis ilicina* (*Aecidium ilicinum* Ellis & Everh.); *Crossospora notata* (*Uredo notata* Arth.), *C. Wilsoniana* (*Cronartium wilsonianum* Arth.), *Cerotelium alienum* (*Chrysomyza aliena* Sydow & Butler), *C. desmium* (*Aecidium desmium* Berk. & Br.).—Similar corrections and additions are given for part of the genera of the Aecidiaceae. The following new combination occurs: *Neoravenelia subtortuosae* (*Ravenelia subtortuosae* Long).—*E. B. Payson*.

8494. BAUCH, ROBERT. Über *Ustilago longissima* und ihre Varietät *macrospora*. [U. longissima and its variety macrospora.] Zeitschr. Bot. 15: 241-279. 6 fig. 1923.

8495. BAUDYŠ, ED., ET RICH PICBAUER. Fungi novi vel minus cogniti. Pars I. Moravske Prirodovedcke Spolecnosti 1^{5F}: 293-307. 6 fig. 1924.—The following are described as new: *Mycosphaerella podpěrae* Picbauer n. sp., *Ascochyta sesleriae* Baudyš et Picbauer n. sp., *Ascochyta baudyšii* n. sp., *Diplodina lappae* Picbauer n. sp., *Diplodina xanthii* Picbauer n. sp., *Diplodina nicandrae* Picbauer n. sp., *Septoria picbaueri* Baudyš n. sp., *Septoria didickeana* Baudyš et Picbauer n. sp., *Septoria gentianicola* Baudyš et Picbauer ad interim, *Rhabdospora astragalicola* Baudyš et Picbauer n. sp., *Dothichiza sanguisorbae* Baudyš et Picbauer n. sp., *Hendersonia sarmentorum* West var. *Salicis capreae* Baudyš et Picbauer n. var., *Camarosporium carpini* Baudyš et Picbauer n. sp., *Ramularia linariae* Baudyš et Picbauer n. sp., *Cercospora poae* Baudyš et Picbauer n. sp., *Cercospora imperatoriae* Baudyš et Picbauer n. sp., *Cercospora raphanistri* Baudyš et Picbauer n. sp., *Cercospora linariae* Baudyš et Picbauer n. sp., *Cercospora nesleana* Baudyš et Picbauer n. sp.—*Frederick V. Rand*.

8496. BAUDYŠ, ED., ET RICH PICBAUER. Příspěvek ke květeně Hub Československé Republiky I. [Additions to the fungous flora of Czechoslovakia. I.] Pub. Fytopath. Sekce Zem. Výzkumného Ústavu Zemědělského v. Bryně 34: 125. 1925.

8497. BAYER, AUGUST. Monografická studie středoevropských druhů čeledi Sordariaceae. (Se zvláštním zřetelem k floristické oblasti státu Československého.) (With French résumé.) [A monograph of the central European species of the family Sordariaceae.] Acta Soc. Sci. Natur. Moraviae. Brno 14: 1-185. 6 fig. 1924.—This work deals with morphologic, ecologic and taxonomic studies on the species which are found in central Europe and particularly in the area of vegetation of the Czechoslovakian Republic. In Czechoslovakia there are 23 species of the genus *Sordaria*, falling into 2 sections; Sect. 1, Eusordaria. Among the 12 species in Czechoslovakia there are 4 new species; *S. pumila*, *S. papillosa*, *S. pilifera*, *S. macrura*.—Sect. 2, Podospora. In Czechoslovakia there are 11 species, of which *S. fimbriata* and *S. pyriformis* are new. Three stromatic species of the genus *Hypocopa*, and 3 species of *Delitschia* occur. The genus *Sporormia* is represented by 17 species, of which *S. reticosa* and *S. globosa* are new. Of the genus *Pleophragimia*, very rare species occur.—(From French abstract.)

8498. BEELI, M. Notes mycologiques. Champignons nouveaux pour la flore belge, récoltés de 1915 à 1923. [Mycological notes. New fungi for the Belgian flora, 1915-1923.] Bull. Soc. Roy. Bot. Belgique 2^e Sér. 56: 57-70. 4 pl. 1924.

8499. BOURGE, PH. Périthèces et sclérotés chez les *Penicillium*. La Cellule 36²: 444-454. 1 pl., 5 fig. 1925.

8500. BRESADOLA, GIACOMO. Selecta mycologica. Ann. Mycol. 18: 26-70. Illus. 1920.

8501. BUCHHEIM, A. N. К биологии *Uromyces primulae* Fuck. [Biology of *U. primulae*.] Trans. Mycol. and Phytopath. Sec., Russ. Bot. Soc. 1: 37-38. 1923.—Experiments conducted at the Institut Botanique de Berne, Switzerland, in 1914 and 1915, have shown that *Uromyces primulae* consists of at least 2 separate physiologic forms. One of these is harbored by *Primula hirsuta* All.; the other, by *P. auricula* L. Successful infection was produced on *P. hirsuta* All, *P. latifolia* L. and *P. pubescens* Jacq., with aeciospores from *P. hirsuta*; but in no case did the rust develop on *P. auricula*. Aecial inoculation from *P. auricula* produced normal uredinia on *P. auricula*, and *P. pubescens*, but not on *P. hirsuta*. Positive results were obtained on inoculating a hybrid (*P. auricula* × *P. hirsuta*) with the aeciospores from either *P. hirsuta* or *P. auricula*. Morphologically the aeciospores of the 2 forms are not quite the same; the form on *P. auricula* has somewhat larger spores.—*M. N. Levine*.

8502. [BUCHHEIM, A. N.] Бухгейм, А. Н. Некоторые наблюдения над распространением и биологией мучнисто-росных грибов в окр. Москвы. [Some observations on occurrence and biology of powdery mildews near Moscow.] (German summary.) Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 34-38. 1925.—The paper is a result of the author's observations of powdery mildews around Moscow in 1922-1924. The main question that he had in mind was to determine the condition of production of the perithecia. His observations indicate that the perithecia begin to develop 3-6 weeks after the appearance of the conidia. A list of powdery mildews found on hosts heretofore not reported from the territory is given, with size of perithecia and number of appendages. Dates of appearance of perithecia on 7 species of mildews are also given. Finally, detailed observations on oak mildew are recorded with reaffirmation of the formerly expressed opinion of the author that the fungus should not be considered as a special species, *Microsphaera alphitoides*, but as the old species *M. alni*.—16 references are given.—*C. D. Sherbakoff*.

8503. CIFERRI, R. Terza contribuzione allo studio degli Ustilaginales: 48-54. Alcuni micromiceti della flora Spagnola e Svizzera. [Third contribution to the study of the Ustilaginales. Fungi of the Spanish and Swiss flora.] Atti. Ist. Bot. Univ. Pavia. Ser. III, 2: 7-14. 1925.—*Entyloma Fragosii* on *Glaucium corniculatum*, *E. unamunoi* on *Dahlia variabilis*, *E. synosuri* on *Lamarckia aurea*, *Tubercinia mayori* on *Sesleria coerulea* and *Protomyces hispanicus* on *Caltha palustris* are described as new species. *Entyloma* sp. on *Pallenis spinosa* and *Hieracium* sp. are also discussed.—*P. D. Caldis*.

8504. CIFERRI, RAFAEL, Y ROMUALDO GONZALEZ FRAGOSO. Hongos parasitos y saprofitos de la Republica Dominicana. [Saprophytic and parasitic fungi of the Dominican Republic.]

Estac. Agron Haina Ser. B, Bot. 1: 1-15. 1925.—Among the fungi discussed the following are here described as new, the authors being authority unless otherwise stated: *Uromyces tri-cholenae* n. sp.; *Guignardia convolvuli* n. sp., *Sphaerella lippiae* n. sp. ad. int.; *Phomatospora convolvuli* n. sp. ad. int., *Sphaerulina hainensis* n. sp. ad. int., *Clithris castanospermi* n. sp. ad. int., *Phyllosticta hainensis* n. sp. ad. int., *P. Sterculicola* Trav. f. *carthagenensis* n. f., *Macrophoma convolvula* n. sp. ad. int., *Dothiorella tricholenae* n. sp. ad. int., *Ciferria Frag.* n. gen., *C. coccotrinacis* Frag. n. sp., *Sphaeropsis codiae* n. sp., *Amerosporium colubrinae* n. sp. ad. int., *Colletotrichum dominicanum* n. sp. ad. int., and var. *ramulicola* n. var., *Pestalozzia espaillatii* n. sp., *Cladosporium artocarpi* n. sp., and *Clasterosporium artocarpi* n. sp.—Frederick V. Rand.

8505. CIFERRI, RAFFAEL, E PIERO REDAELLI. *Monografia delle Torulopsidaceae a pigmento rosso*. [Monograph of the red Torulopsidaceae.] Atti Ist. Bot. Univ. Pavia. Ser. III, 2: 147-303. 8 pl. 1925.—This is an extensive discussion and reclassification of the asporogenous, budding, red, pseudo-ferments. The family Torulopsidaceae Ciferri 1925 of the sub-order Blastosporineae, order Thallosporales, class Hyphomycetes, is divided into 2 sub-families. (1) Cryptococcaceae Kützing-Vuillemin 1833-1910, including the forms without hyphae; (2) Mycotruleae nobis 1925 including the forms with hyphae; and an intermediate genus *Blastodendron* Ota 1924 to include pseudomycelial forms.—The genera *Klockeria* Janke 1923 (lemon-shaped or apiculate cells), *Eutorulopsis* Ciferri 1925 (round, oval, elliptical or elongated with oil drops in young cells) and *Torulopsis* Berlese 1894 (without oil drops) are included in the sub-family Cryptococcaceae. The genera *Sporobolomyces* Kluyver et Van Niel 1924 (budding in form of a corona, with stigmata and aerial reniform or falciform cells); *Candida* Berkhout 1923 (budding in chains at tips of septate hyphae); *Mycotorula* Will 1917 emend. nobis 1925 (budding, not in chains or very short ones at tips of septate hyphae); and *Pseudomonilia* Geiger 1910 (continuous mycelium). are included in the sub-family Mycotruleae.—The following new species and varieties are presented with detailed morphological, cultural, bio-chemical and pathological descriptions: *Mycotorula pulmonalis*, isolated from an abscess of human lungs, *M. pulmonalis* var. α from tubercular lungs, *Eutorulopsis Dubia* (*Torula rosea* collection of Prof. Carbone), *Torulopsis Montii* isolated from Lake Como, *T. sanniei* from tubercular cavity, *Blastodendron nosocomii* from the air of a tuberculosis hospital, *B. aereus* also from the air of a hospital, *Mycotorula polymorpha* (*Torula glutinis*, collection of Prof. Carbone), *Blastodendron simplex* (*Saccharomyces glutinis* Coll. of Baarn), *Torulopsis sailtoi* n. nomen (*Torula rubra* Saito) isolated from the air of Manchuria, *Torulopsis sanguinea* (Schimon) Will (*Torula sanguinea* Schimon) isolated from beer by Will, *Blastodendron Carbonei* n. nomen (*Saccharomyces glutinis* of the collection Carbone), *Mycotorula muris* n. sp. from a case of blastomycosis of rat, *Torulopsis bronchialis* n. sp. from sputum of bronchopneumonia patient, *Sporobolomyces photographus* (Biourge) nobis n. comb. (*Torula photographa*—*Sp. roseus*), *Torulopsis biourgei* n. sp. (= *Torula* N. 216 ? Biourge), *T. saccharophoba* n. sp. (Biourge N. 211), *T. corallina* (Saito) nobis n. comb. (= *Torula corallina* Saito) from air in Manchuria, *T. mucilaginoso* (Jörgensen) nobis n. comb. (= *Torula mucilaginoso* Jörg.), *Klockeria austriaca* (Klöcker) Janke, *Torulopsis rufula* (Saito) nobis n. comb. (= *Torula rufula* Saito), *T. minuta* (Saito) nobis n. comb. (= *Torula minuta* Saito), *Mycotorula rubescens* (Saito) nobis (= *Torula rubescens* Saito), *Torulopsis aurantiaca* (Saito) nobis n. comb. (= *Torula aurantiaca* Saito).—P. D. Caldis.

8506. CUNNINGHAM, G. H. A critical revision of the Australian and New Zealand species of the genus *Secotium*. Proc. Linn. Soc. New South Wales 49: 97-119. 1924.—Sixteen species are discussed, 14 of them being confined to Australasia; 5 species are described as new. A general account is given of the structure and development of the plant, and also an artificial key to the species.—(From *Australian Sci. Absts.*)

8507. DUSTAN, A. G. Studies on a new species of *Empusa* (*E. erupta*) parasitic on the green apple bug, *Lygus communis* var. *novascotiensis* (Knight) in the Annapolis Valley. Proc. Acadian Entom. Soc. 1923: 14-36. 4 pl. 1924.

8508. [ELENÉV, P. F.] ЕЛЕНЕВ, П. Ф. Попытка дифференциации разложения растительных остатков в связи с их микофлорой (French résumé.) [An attempt at differentiation of the decomposition of vegetable remnants in connection with their mycoflora.] Труды

Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Section Mycol. and Phytopath., Russian Bot. Soc.] 1: 81-100. 1923.—It is suggested that dead plant parts be divided into 2 main groups, herbaceous and woody, the latter to be subdivided into the following 6 groups: Leaves, branches, trunks, stumps, flowers, fruits. In the case of herbaceous material, it divided into at least "dead or dried up" material of the current year and "dry" of the preceeding year. The groups of woody plant materials are divided according to their age into 5 classes, with a general physical and mycological characteristic of each and a suitable terminology to be used in connection with each.—*C. D. Sherbakoff*.

8509. [ELENEV, P. F.] ЕЛЕНЕВ, П. Ф. О желательности большей полноты сведений, даваемых местными флористическими списками грибов. (French résumé.) [The desirability of more detailed information in local lists of fungi.] Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Section Mycol. and Phytopath., Russian Bot. Soc.] 1: 55-79. 1923.—The paper is a report read before the Society, January 20, 1921, and is an extensive discussion of the need of more detailed information in connection with lists of the fungi. A detailed outline of the kind of data and how they should be arranged is given.—*C. D. Sherbakoff*.

8510. [ЕРЕМЕЕВА, А. М.] ЕРЕМЕЕВА, А. М. *Entomophthora sphaerosperma* Fres. на гусеницах капустницы и на яблонной медянице (German summary.) [*Entomophthora sphaerosperma* Fres. on caterpillars of cabbage butterfly and on apple *Psylla*.] Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 100-103. 3 fig. 1925.—The author reports as new for Russia, *Entomophthora sphaerosperma* Fres. on *Psylla mali*, which at the same time was attacking also caterpillars of cabbage butterfly.—*C. D. Sherbakoff*.

8511. ESPINOSA BUSTOS, MARCIAL R. Sobre las especies chilenas del genero *Fomes*. [Chilean species of *Fomes*.] Rev. Chilena Hist. Natur. 25: 321-343. 7 pl., 3 fig. 1921.—Detailed descriptions, with synonymy, vernacular names, habitat, dispersal and citation of specimens seen, are given for the Chilean species of *Fomes*: *F. applanatus* (Pers.) Gill., *F. leucophaeus* (Mont.) Lloyd; *F. rimosus* (Berk.) Cooke; and *F. senex* (Nees & Mont.) Cooke.—*F. W. Pennell*.

8512. FASEVOLI, GIOVANNI. Contributo alla conoscenza degli ifomiceti del terreno agrario. [Contribution to the knowledge of Hyphomycetes of cultivated soil.] Bull. Orto. Bot. R. Univ. Napoli 7: 217-236. 2 pl. 1924.—The author made investigations in 4 different kinds of soils with tests 10 and 20 cm. deep in different seasons and with different crops, and found that: (1) the Hyphomycetes are more numerous at 10 cm. than at 25 cm.; (2) in Siliceous-Kley soil and Kley siliceous-calcareous soils they are more numerous than in other kinds of soil; (3) the highest number is found in August; (4) different crops give a difference in number of molds. The highest numbers are found in soil where potatoes are cultivated; next came wheat and corn soils, with no difference in the species.—The author grew the various species in a rice medium and from the different colors obtained, classified the species. He found that of 40 species observed, the Mucedinaceae, are most numerous, having 9 genera; the Dematiaceae had 5 genera; the Tuberculariaceae, 2 genera; and the Persmesporaceae, only 1 genus.—Some species, such as *Penicilium glaucum*, *P. lilacinum*, *P. roseum*, *Aspergillus terricola*, *A. flavescens*, *Sterigmatocystis nigra*, *Cladosporium herbarum*, *Verticillium glaucum*, are widely distributed through different countries.—Others, such as *Stysanus*, *Torula*, *Eurotium*, etc., are found only locally. The following new species are described: *Eurotium rhodosporum*, *Fusidium cavarneanum*, *Acladium capitulatum*, *Oospora bispora*, *Sepedoneum pomilianense*, *Acremonia guttulata*, *Stemphylium flavicans*, and *Sphaeridium biguttulatum*.—Author (transl.).

8513. FISCHER, ED. Pilze. [Fungi.] I. Bibliographie. Ber. Schweiz. Bot. Ges. 33: 1-20. 1924; 34: 33-51. 1925.

8514. FISCHER, ED. Weitere Beiträge zur Kenntnis der Gattung *Graphiola*. [The Genus *Graphiola*.] Ann. Mycologici 20: 228-237. 4 fig. 1922.

8515. FISCHER, ED. Zur Entwicklungsgeschichte der Fruchtkörper der Secotiaceen. [Development of the fruiting body in the Secotiaceae.] Veröffentlich. Geobot. Inst. Rubel Zurich Heft 3: 571-582, 3 fig. 1925.

8516. FISCHER, ED. Zur Kenntnis von *Graphiola* und *Farysia*. [The genera *Graphiola* and *Farysia*.] Ann. Mycologici 8: 183-197. Fig. 1-7. 1920.

8517. [FLEROV, B. K.] Флеров, Б. К. К цитологии *Ustilago Avenae* Pers. по данным культуры in vitro. [French summary.] [A contribution to the cytology of *Ustilago avenae* Pers. on data from its culture in vitro.] Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Section Mycol. and Phytopath., Russian Bot. Soc.] 1: 23-36. 1 pl. 1923.—The author studied pure cultures of *Ustilago avenae* from spore germination to spore production. He found 2 distinct races, as earlier suggested by H. Federley (1903-4), the principle difference, as also suggested by Federley, being in the behavior of the sporidia. The author finds that both races when grown in water or on relatively poor medium (formulas for media are given) produce on the promycelium a small number of sporidia which fuse and then the promycelium and the fused conidia germinate into mycelium. However, the behavior of the 2 races is quite different when grown on a richer nutrient medium. Here the 1st race produces abundant sporidia which neither fuse nor produce mycelium but continue to multiply by budding, in a few days producing fairly large colonies of conidia. When these colonies are transferred to a liquid medium the fungus continues to multiply by budding; 6-7 days later the conidia increase in size, become rounded, the walls become gelatinized and thickened and the chlamydospores begin to form. The latter, as soon as they reach maturity, germinate in the same medium. In about 2 weeks the cultures become dark because nearly all conidia have changed into chlamydospores. These spores have thicker and darker walls and are nearly twice as large as the spores produced on the host. The 2nd race on the richer media produces relatively few conidia which on the 4th-5th day begin to develop into mycelium; 2 weeks after transfer into the liquid medium the unicellular hyphae begin to branch and to divide with crosswalls and some begin to thicken considerably; they then break up into segments each of which turns brown and becomes a chlamydospore, the latter being much the same in size and color as those formed on the host. The cytological studies showed that in the promycelium the nucleus of the lower cell was dividing, as per Danegard, and not in the upper cell as per Werth and Ludwigs. The spores form without fusion of nuclei; and no true binucleate condition was found in the cultures where the fungus went through its complete life cycle. The binucleate condition may take place either through fusion of 2 cells of the promycelium or from a simple division of nucleus in 1 conidium growing into mycelium. 27 references are given.—C. D. Sherbakoff.

8518. [FLEROV, B. K.] Флеров, Б. К. Литературные данные о грибах Московской губ. [The literature on fungi of Moscow government.] Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Section Mycol. and Phytopath., Russian Bot. Soc.] 1: 101-105. 1923.—A brief review of what was published on fungi of Moscow government, with the conclusion that relatively little is known about the fungi of the territory, many parts of which are so far not yet surveyed. 42 references are given.—C. D. Sherbakoff.

8519. [ФОКИН, А. Д.] Фокин, А. Д. К экологии „черни“—*Fumago vagans* Pers. [A contribution to the ecology of sooty mold—*Fumago vagrans* Pers.] Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 29-33. 1925.—The author reports his observations on an unusually extensive development of *Fumago vagans* in Vjatka government, Russia, 1923. This is explained by unusual weather conditions which at first stimulated an excessive development of aphids and then were specially favorable for development of the fungus. Details are given. The fungus was observed on plants (listed) belonging to 21 families. Attention is called to the fact that only the conidial stage was observed, that the fungus developed extensively also on some plants free from aphids but producing sugary substances (such as fruits of *Sambucus*) and that on some plants (such as hawthorne, rhubarb, etc.), though abundantly infested with aphids, there was no *Fumago*. A brief list of references, all Russian, is given.—C. D. Sherbakoff.

8520. GATANEI, A. Présence d'un *Monilia* sur la langue de Singes d'Algérie. [A *Monilia* on the tongues of Algerian monkeys.] Compt. Rend. Soc. Biol. 93: 92-94. 1925.—The Algerian monkey, *Macacus inuus*, may harbor on its tongue a *Monilia* without any visible lesion appearing. Cultural characters are given and it is decided that the form is close to *M. paratropicalis* Castellani.—Oran Raber.

8521. GILLIATT, F. C. Some new and recorded notes on the life history of *Entomophthora sphaerosperma*. Proc. Acadian Entomol. Soc. 1924: 46-54. 1 pl. 1925.

8522. GONZALEZ FRAGOSO, ROMUALDÓ. Uredales (royas de los vegetales). (prólogo Ed. FISCHER) Vol. 1, 416 p., Vol. (2), 424 p. Museo. Nacion. Cien. Nat.: Madrid, 1924 [1925].

8524. GOUWENTAK, CORNELIA. Eine neue *Verticillium*art. [A new species of *Verticillium*.] Phytopath. Lab. Willie Com. Scholten 8: 55-56. 1924.

8525. GRIGORAKI, LÉONIDAS D. Recherches cytologiques et taxonomiques sur les dermatophytes et quelques autres champignons parasites. [Cytological and taxonomic researches on the dermatophytes and some other parasitic fungi.] Ann. Sci. Nat. Ser. Bot. et Zool. 7: 165-444. 28 pl. (3 col.). 1925.

8526. [GUSEVA, K. A.] ГУСЕВА, К. А. К истории развития *Fabrea Ranunculi* Karst. (French summary.) [Life history of *Fabraea ranunculi* Karsten.] Труды Московского Отд., Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Sec. Mycol. and Phytopath., Russian Bot. Soc.] 1: 39-45. 1 pl. 1923.—The author finds that the mycelium of *Fabrea ranunculi* is composed of uninucleate cells, with haustoria; the pyrenidia develop from a ball of intertwined hyphae, with cavity. The ends of the fruiting hyphae grow into the cavity, there producing conidia. The asci are apogamic, and there are no male cells; the apothecia develop from the stroma, with a group of ascogonia which are composed of a row of uninucleate cells twisted into a ball and ending with a many-celled trichogyne. All cells of the ascogonium are alike in their potentiality, each giving rise to hyphae, hooked on the ends, from which asci are produced. There is no clear pairing of the nuclei in ascogenous hyphae; the trichogyne, performing no fertilizing function, may be considered as a remnant of an ancient organ which may in the past have taken part in the fertilization. 13 references are given.—C. D. Sherbakoff.

8527. JAUMAIN, D., ET A. COLARD. Sur les caractères d'un champignon du genre *Monilia* isolé dans un cas mortel de mycose pulmonaire, contracté au Congo belge. [Characters of a *Monilia* which produced a fatal attack of pulmonary mycosis in the Belgian Congo.] Compt. Rend. Soc. Biol. 93: 858-860. 1925.—Cultural and microscopic characters, biochemical reactions, and pathogenic action on the rabbit are given.—Oran Raber.

8528. JENKINS, ANNA A. The avocado scab organism. Phytopathology 15: 807. 1925.—A critical study of the fungus indicates that it is an undescribed species of *Sphaceloma*. A technical description is being prepared.—B. B. Higgins.

8529. JUEL, H. O. Mykologische Beiträge. IX. [Mycological contributions. IX.] Ark. för Bot. 19²⁰: 1-10. 2 pl., 2 fig. 1925.—The paper deals with parasitic fungi belonging to the Hypocreaceae, in which the reproductive organs occur on the surface of leaves of *Buxus*. Cultures of *Volutella buxi* (Cda) Berk. were made in order to test the supposed relation between this species and *Verticillium buxi* (Link.) Awd. et Fleisch. Cultures 5 months old did not show *Verticillium* nor did cultures of *Verticillium* show *Volutella*. *Volutella buxi* belongs to *Nectriella rousseliana* (Mont.) Sacc. and *Verticillium buxi* belongs to *Nectriella coronata* which is described as new. A parasite on *Volutella buxi*, known in literature as "*Psilonia rosea*" Fries, was studied and shown to be a new species of a new genus. It is described as *Cibdelia infestans*. In the author's opinion it belongs to Monadineae Zoosporae.—O. Heilborn.

8530. KALLENBACH, FRANZ. Boletus pseudo-sulphureus n. sp. Zeitschr. Pilzkunde 2: 225-230. 1923.—A complete diagnosis is given and also the special distinguishing characteristics which separate this species from *B. sulfureus* and *B. salmonicus*.—F. Weiss.

8531. [KARAKULIN, B. P.] КАРАКУЛИН, Б. П. О взаимоотношении конидиальных стадий *Septomyxa* и *Marssonina*, встречающихся на клене и о связи их с сумчатой формой *Gnomonia*. (German summary.) [Relation of *Septomyxa* and *Marssonina* found on *Acer negundo* and their connection with *Gnomonia*.] Болезни Растений, Вест., Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 73-81. 1925.—The paper gives a detailed review of the literature on *Septomyxa* and *Marssonina*, especially of the species found on *Acer*, and records the author's studies of these genera, including the ascigerous stage found upon dead, overwintered leaves of *Acer negundo* collected near Leningrad. The cultural studies and inoculation experiments showed that *S. negundis* Allesch. on leaves, twigs and fruits of *A. negundo* is a conidial stage of *Gnomonia*, and on the leaves it is identical with *Marssonina*. The ascigerous stage found is considered to be a new form, *Gnomonia cerastis* (Riess) C. et d. N. f. *negundinis* Karakulin. A Latin description of the fungus is given.—C. D. Sherbakoff.

8532. KAVINA, KAREL. Sur une *Gyromitre* nouvelle. (Additiamenta mycologica No. 4. Acta Bot. Bohem. 3: 16-20. 1 fig. 1924.—The author found a new *Gyromitra* on the rotten trunks of beech trees in a virgin forest on Mount Boubin, Šumava. He named it *G. gabretae* n. sp. *G. inflata* Cumino is its closest relative.—*From abst. in Preslia (transl.)*).

8533. KAVINA, KAREL: České slizáky. [Czech species of Gomphidius.] Mykologia 1: 1924. Trav. Mycol. Tchécoslov. 1924²: 1-7. 1 pl. 1924.—The author discusses the characters of the genus *Gomphidius*. The Czechoslovakian species are: *G. glutinosus* Fr.; *G. maculatus* Fr. with forms *gracilis* and f. *Cookei*; *G. roseus* Fr.; *G. viscidus* Fr. with 1 form, *testaceus*. The author describes these species and supplements his descriptions with numerous critical observations on their variability, habitat, season, and culinary properties. An analytic key permits an easy identification of each species.—*From abst. in Preslia (transl.)*.

8534. KLEIN, LUDWIG. Notizen über die Pilzflora des Wurtemberger Schwarzwaldes. [Fungus flora in the Wurtemberger black forest.] Zeitschr. Pilzkunde 1: 58-62. 1922.

8535. KLIKA, JAROMÍR. Einige Bemerkungen zur Pilzflora von Böhmen. [Some remarks on the fungous flora of Bohemia.] Ann. Mycol. 22: 415-418. 1924.—The author describes 2 new species; *Vibrissia bohémica* sp. n., on decayed leaves, and *Rhyarobius Kutakii* n. sp. on dung.—*From Abst. in Preslia (transl.)*.

8536. KLIKA, JAROMÍR. Monografie českých padlí. Příspěvek k mykologickému a fytopathologickému výzkumu Čech. [Monograph on the Erysiphaceae of Czechoslovakia.] Spisy Masar. Akad. Práce, 23: 1-80. Illus. 1924.

8537. KLIKA, JAROMÍR. O zastupcích rodu *Cudoniella* Sacc. (vodnicka) v Československu. [Notes on species of the genus *Cudoniella* Sacc. in Czechoslovakia.] Trav. Mycol. Tchécoslovaques 3: 1-8. 1 fig. 1925.—*C. aquatica* var. *montana* n. var. is described.—*Frederick V. Rand*.

8538. KLIKA, JEROMÍR. Příspěvek k poznání hub chřapáčovitých (Helvellacei) v Československu. [Critical notes on the Helvellas of Czechoslovakia. (French summary.) Zvláštní Otisk z Vestníku Kral. Ces. Spolec. Nauk 2: (1-54). 1924.—No new species, etc., are given.—*Frederick V. Rand*.

8539. KLIKA, J. Příspěvek k poznání slovenských mikromycetů. [Contributions to the fungous flora of Slovakia.] Věda Přírodní 4: 118-121. 1923.—This is a list of 77 species of fungi which the author has encountered in Slovakia and in Sub-Carpathian Russia, 1921-1922. Some species are new or very rare for the territory of the Czechoslovakian Republic. The literature concerning the Micromycetes of the region is found in the introduction.—*From abst. in Preslia (transl.)*.

8540. KLIKA JAROMÍR. Sur l'emplacement systématique du genre *Microsphaera* du blanc de chêne d'Europe et sur quelques remarques sur la biologie de cette espèce. [The systematic position of the *Microsphaera* of the European white oak and some notes on the biology of the species.] Acta. Bot. Bohem. 3: 21-31. 1 fig. 1924.—The author shows that the *Microsphaera* of the European white oak cannot be considered as *M. quercina* and that (1) it is necessary to differentiate *M. alpinoides* from *M. abbreviata* both morphologically and physiologically; (2) it is necessary to designate as a new variety, *M. extensa* var. *pseudoamericana*, the form on the leaves of *Quercus laurifolia* in Europe. The author claims that the perithecia arise through diminution of nutrients in the substrate in autumn.—*From abst. in Preslia (transl.)*.

8541. KNIEP, HANS. Über *Urocystis anemones* (Pers.) Winter. [*U. anemones* (Pers.) Wint.] Zeitschr. Bot. 13: 289-311. 1 fig. 1921.—This is a detailed account of the life history and sexuality of the species. The short promycelium develops at its tip 3-4 branches. The diploid nucleus of the chlamydospore undergoes 2 divisions, the 4 nuclei resulting pass into the branches of the whorl, 1 nucleus remaining in the promycelial tube if only 3 branches have been developed in the whorl. Horseshoe-shaped copulation-canals are formed connecting the branches of the whorl, and through these canals 2 of the nuclei migrate from their original position into 2 branches of the whorl, these becoming bi-nucleate. The bi-nucleate branches elongate, giving rise to mycelium. The author discusses the mycelial growth of the species in some detail. Saprophytic mycelium may be produced in pure culture.—*U. anemones* is said to be a collective species (group of related strains).—*John E. Flynn*.

8542. KRUGER, EDGAR, **Die bei Hamburg Gefundenen Boletus-Arten.** [Boletus species from Hamburg.] Zeitschr. Pilzkunde 1: 67-68. 1922.

8543. [KURSANOV, L. I.] Курсанов, Л. И. **К морфологии Uredineae** [A contribution to morphology of Uridineae.] (French Summary.) Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Sect. Mycol. and Phytopath., Russian Bot. Soc.] 1: 5-21. 2 pl. 1923.—The paper is based on the author's studies of the following 4 rust fungi: *Gymnosporangium juniperinum* Fr., *Peridermium strobil* Kleb. (*Cronartium ribicola*), *Aecidium leucospermum* D. C. *uninucleatum*, and *Chysomyxa piroloae* Rostr. (*Uredo piroloae* Winter). Development of the fruitification in the 1st is aecidial, with an oval peridium, hyphae uninucleate, vertically arranged; the sterile tissue of aecium and aecium-like fruitification and sterile cells of Caecoma are fundamentally of the same order without any special morphological significance (trichogyne); the primary binucleate cells do not directly develop into basal cells of the aeciospores as is usual but at first grow into diploid hyphae which may be compared to ascogenous hyphae giving rise not to asci but to chains of aeciospores; the peridial cover develops from only a few basal cells and only after the cover is formed begins the development of the other basal cells, those on the outside producing peridial walls while the remaining ones give rise to the aecial spore chains.—The 2nd fungus, *P. strobil*, is binucleate in the fruitification beginning only in the basal cells of the aecium, the basal cells being distinguished by their considerable width and swollen side walls; the uppermost 2-3 layers of cells of aecial chains stick tightly together and form the cover of the peridium; the peridial walls here develop not from 1 (as usual) but from 2 rows of peripheral basal cells, the walls thus being of 2 layers from the beginning.—The 3rd fungus, *A. leucospermum uninucleatum*, on *Anemone ranunculoides*, has basal cells mostly uninucleate, producing uninucleate chains of aeciospores; among the latter, seldom among peridial cells, are found up to 5% of "secondary-binucleate" chains; however, there are some binucleate basal cells with binucleate chains of spores which are therefore "primary binucleate." On the same host is commonly found the same species of rust with normal, binucleate basal cells, which does not otherwise differ from the uninucleate form. There are indications that the uninucleate form is a stable modification rather than a temporary variation.—The 4th fungus, *C. piroloae*, has the mycelium made up of binucleate cells penetrating into the cone of the host and from there into the developing leaves. In the latter the intracellular mycelium is fairly abundant, binucleate, with haustoria. The leaves remain normal in their appearance until the spring of the 2nd year when the uredo and teliospores are produced and after maturity of which the leaves die off. The uredo stage, which in the ripe condition resembles the aecial, forms here in a way similar to a typical Caecoma. The teliospores are formed in a similar fashion, and there is no special structure for basal cells of either uredo- or teliospores. 9 references are given.—*C. D. Sherbakoff*.

8544. [KURSANOV, L. I.] Курсанов, Л. И. **История и современное состояние изучения Phytophthora infestans de Bary.** [History and present state of knowledge of *P. infestans* de Bary.] Труды Московского Отд. Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div., Sect. Mycol. and Phytopath., Russian Bot. Soc.] 1: 107-116. 1923.—The paper reviews the literature and briefly states the problems that remain to be investigated in connection with *Phytophthora infestans*. The problems briefly are as follows: To check up Erikson's mycoplasma theory; to further study the fungus on definite synthetic media for elucidation of its physiology—especially to determine the influence of substances that may be expected in soils, to study spore germination and to obtain more accurate knowledge of the sexual organs and the process of fertilization; to study the existence of biological races in tubers and in stems from infected tubers; and to check up the tuber-to-tuber infection in soil and infection with conidia. 12 references are given.—*C. D. Sherbakoff*.

8545. LEONIAN, LEON H. **Physiological studies on the genus Phytophthora.** Amer. Jour. Botany 12: 444-498. 13 pl., 7 fig. 1925.—Fifty-three strains of this genus, including most of the described species, were studied in pure culture. Solid agars, liquid media, and M/100 solutions of a number of sugars, amino acids, nitrates, sulphates, phosphates, chlorids, and a carbonate were used under controlled conditions to obtain specific reactions. Presence and absence of aerial hyphae, of sporangia and oögonia, rate and type of growth of colonies on solid agars at different temperatures, and production or non-production of sporangia and oögonia

in various solutions, provided specific reactions useful in identification. The following taxonomic changes are suggested as a result of these studies: *Pythiacystis citrophthora* to *Phytophthora* as *P. citrophthora*; *P. phaseoli* to a variety of *P. infestans*; *P. colocasiae*, *P. palmivora*, *P. faberi*, *P. parasitica*, *P. terrestris*, Reddick's *Phytophthora* and *P. parasitica* var. *rhei* to DeBary's *P. omnivora*. Saltation in the genus has been studied in detail and the conclusion is drawn that no new species or varieties have been produced by this means and that, while rate and type of colony growth, shape and size of sporangia, and presence or absence of oögonia are greatly influenced by saltation, these traits are too unstable and reversible to be given primary specific importance. One new species, *P. pini*, is described. A key, based upon physiological reactions, is provided.—*E. W. Sinnott.*

8546. LOHWAG, H. *Trichaster melanocephalus* Czern. Arch. Protistenk. 51: 305-320. 2 pl. 1925.—This fungus is compared with *Scleroderma*, *Geaster*, *Astraeus*, *Hysterangium*, *Myriostoma* and other genera. A detailed diagnosis of *Trichaster melanocephalus* is given. New facts established are: The species grows in Vienna. It is closely related to *Geaster*. The inner layer of the peridium remains connected to the outer layer. It is widely distributed, but may be confused, when young, with *Scleroderma vulgare* and *Geaster*. The pseudoparenchymatous layer, as a result of swelling caused by absorption of water, causes bursting of the leathery outer layer of the periderm. This results in a folding back of the tips. The petioles of the peridium of *Myriostoma coliforme* are branches from the bases of the fruiting bodies.—*R. P. Hall.*

8547. LOUBIÈRE, AUGUSTE. Recherches sur quelques Mucédinées caseicoles. [Cheese-inhabiting Mucedineae.] 93 p. 10 pl. (Thèse Univ. Paris) Les Editions de "La Vie Universitaire." Paris, 1924.

8548. MESLIN, ROGER. À propos d'une récolte de *Stilbella tomentosa* (Schrad.) Bresad. [A collection of *S. tomentosa*.] Bull. Soc. Linn. Normandie 7^e Sér. 8: 41-42. 1925.

8549. MESLIN, ROGER. Le *Milesina Scolopendrii* (Fuck.) Jaap en Basse-Normandie. [M. *Scolopendrii* in lower Normandy.] Bull. Soc. Linn. Normandie 7^e Sér. 8: 42. 1925.

8550. MESLIN, R. 1^o Quelques Discomycètes de la Manche. 2^o Sur une station du *Merisma giganteus* (Pers.) Fr. aux environs de Saint-Lô. Bull. Soc. Linn. Normandie 7^e sér. 8: 9-10. 1925.

8551. [MURASHKINSKIY, K. E.] Мурашкинский, К. Е. Новые виды Алтайской микофлоры [New species of fungi in the Altai Mountains.] Оттиск из Трудов Сиб. С.-Хоз. Академии [Proc. Sib. Agric. Acad.] 5: (1-3). 1925.—The paper gives Latin descriptions of new species of fungi from the collection of about 2000 specimens made by the author and S. M. Antonov, in the Altai Mountains, as members of Chuisk's expedition. Most of the fungi have not as yet been studied. The following are described as new: *Ophiobolus dracocephali altaijensis*, *Omphalospora stelleriae*, *Puccinia tshujensis*, *Phyllosticta guldenstadtae*, *Diplodia nitrariae*, *Diplodia corydalis*, *Camarosporium nitrariae*, *Septoria altaijensis*, *S. ligulariae*, and *S. thermopsidis*.—*C. D. Sherbakoff.*

8552. NADSON, G. A., ET N. A. KRASSILNIKOV. Sur la réversibilité du développement chez la Levure *Saccharomyces paradoxus* Batschin. [Reversibility of the development of *S. paradoxus*.] Compt. Rend. Soc. Biol. 93: 423-426. 44 fig. 1925.—The cytology and life history of this yeast are described. Among the most peculiar features is the transformation of the ascus into a vegetative cell, accomplished by the same steps as sporulation but in reverse order.—*Oran Raber.*

8553. [НАУМОВ, N. A.] Наумов, Н. А. О некоторых новых или малоизвестных видах [New or little known fungi.] Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 137-149, 1 fig. 1925.—The fungi described here (in Latin) were collected in Leningrad and Novgorod governments at various periods, mostly before 1915. Following are the fungi here described: *Pleospora rhinanthi* n. sp. on *Alectorolophus major*, *Ascocalyx abietis* n. gen. et n. sp. on *Abies sibirica*, (perithecial stage, *Pycnocalyx abietis* N. N.), *Phoma dothideicola* n. sp. in fruiting bodies of *Dothidea ribesii* on *Ribes rubrum*, *Dothichiza viburni* Karsten on *Viburnum opulus*, *Dothichiza piceana* n. sp. on *Picea excelsa*, *Ascochyta solani-tuberosi* n. sp. on potato, *Megaloseptoria mirabilis* n. gen. et n. sp. on *Picea pungens*, *Rhabdospora intrusa* n. sp. on *Rumex*,

Rhabdospora fusarioides n. sp. on *Tilia cordata*, *Spermodermia galii* n. sp. on *Galium mollugo*.—C. D. Sherbakoff.

8554. NĚMEC, B. Dispersion des spores chez quelques Hyménomycètes. [Dispersion of spores by certain Hymenomycetes.] Bull. Internat. Acad. Sci. Bohême 1924: 1-3. 1924.—The most rapid growth observed in the case of the pileus of *Boletus bulbosus* was 45 mm. in 24 hours. The quantity of spores liberated during a given time increases (irregularly), attains its maximum before or at the time the growth of the pileus ceases, after which the liberation of spores diminishes and finally ceases altogether. The increase and decrease in the quantity of spores liberated is probably a vital phenomenon. The spores falling through the tubes, come to rest in part directly beneath the pileus, in part at considerable distances from it. If the temperature of the air is not too high, the pileus will be found to be warmer than the air. If the temperature is below 18°C. the fungus is somewhat cooler. It is also possible that the electrical charges on the spores are not without importance for spore dispersion.—From abst. in *Preslia* (transl.).

8555. NĚMEC, B. Vypouštění výtrusů z plodnic některých Hymenomycetů. [Dispersion of spores from the fruiting bodies of some Hymenomycetes.] Rozpravy II. Tridy Ceske Akademie 33^o: 1-23. 1924.—The author studied the number of spores produced by the hymenomycete fruiting body, calculating the number of spores by the number of basidia on a surface of known dimension multiplied by the number of spores produced on 1 basidium. By this method it was found that the fruiting body of *Boletus* with pileus diameter of 40 mm. contains 2,962,656,000 spores. Another method used was to allow the spores to fall on a gelatinized plate and then to count the spores in 10 areas of known dimension and from the data obtained to calculate the total number.—In studying the growth of the fruiting body of *B. rufus* the author found that it grows both by day and by night. The rate increases to a maximum, slows down and finally stops. Growth in height stops sooner than growth of the pileus in breadth. Dispersion of spores begins before the pileus attains its full growth in breadth; it is most intensive during the period of greatest rapidity in breadth growth, the maximum continues several days, and then the rate of spore dispersal lessens. A considerable portion of the spores fall outside the periphery of the pileus.—Similar experiments with *B. versipellis*, pileus diameter 14 cm., gave 13,103,000,000 spores in 7 days.—The temperature of the fruiting body was found to be higher than that of the air, that of the younger ones being a little higher than that of the mature ones. Contrary to Falck, the temperature of wormy fruiting bodies was not higher than that of non-wormy ones. On another occasion, when the fungi were transpiring very intensively the temperature of the fruiting bodies was a little lower than that of the air.—The spores are dispersed under and around the pileus and also above it, often pasting themselves upon it. The author believes that the higher temperature of the pileus contributes to spore dispersal through rising currents of air.—From abst. by Malkovský.

8556. NEUHOFF, WALTHER. *Inocybe Bongardii* und ihre Verwandten. [I. bongardii and related forms.] Zeitschr. Pilzkunde 4: 9-14. 1925.

8557. PELÉ, P., ET J. E. CHENANTAIS. Contribution à la flore mycologique de la Loire-Inférieure. [Contribution to the fungous flora of Loire-Inférieure.] Bull. Soc. Sci. Nat. Ouest France 4^e sér. 1: 71-115. 1921.—The authors had as their object the description of the species which have been observed in that region in the last 20 years, that is to say, since Ménier published his "Aperçu la Flore cryptogamique de la Loire-Inférieure." Their memoir consists of 2 parts: the 1st, signed by Pelé treats chiefly of the Discomycetes and Myxomycetes; she also mentions some Hymenomycetes and certain lower fungi. The 2nd part, by Chenantais, consists of 22 pages and is devoted exclusively to the Pyrenomycetes, which are arranged according to Saccardo.—A. de Puymaly (translated).

8558. PILÁT, A. Champignons tchécoslovaques. Espèces nouvelles du genre *Lepiota* décrites par Velenovský. [Czechoslovakian fungi. New species of *Lepiota* described by Velenovský.] Ann. Soc. Linnéenne Lyon 71: 45-53. 1 fig. 1924.—J. Velenovský described in his work "České houby" (Czech Fungi) the following species of *Lepiota*: *L. glabra*, *thymiphila*, *aurantiaca*, *parvula*, *pomacea*, *oreadiformis*, *crustata*, *rufovelutina exannulata*, *striata*, *pusilla*, *pseudocristata*, *olgae*, *latisquamosa*, *hendrychii*, *cosici*, *stadkyi*, *variegata*, *densesquamosa*, *bulbosa*, *affinis*, *rubescens*. The diagnoses have been rendered in Latin by ALBERT PILÁT, and numerous figures are given.—From abst. in *Preslia* (transl.).

8559. PILÁT, A. Nouvelles espèces tchécoslovaques du genre *Amanita*. [New Czechoslovakian species of *Amanita*.] Jour. Pharm. Alsace et Lorraine 1924. 1-4. 1 fig. 1924.—The author publishes Latin diagnoses of 5 species of *Amanita*. The diagnoses (in Czech) are published by J. VELENOVSKÝ in his work "České Houby" (Czech Fungi), Prague, 1920. (Pub. Soc. Bot. Tchechosl.) The species are *A. sublutescens*, *formicaria*, *cordae*, *sternbergi*, and *glutinosa*.—From *abst. in Preslia* (transl.)

8560. REISNER, OTAKER. Les espèces du genre *Geaster* Mich. en Bohême. [*Geaster* spp. in Bohemia.] Travaux Mycol. Tchechoslov. 1: 1-9. 1 pl. 1924.

8561. SAMUEL, GEOFFREY. Some new records of fungi for South Australia, Part III, together with a description of two new species of *Puccinia*. Trans. and Proc. Roy. Soc. South Australia 48: 149-161. 2 pl. 1924.—The 2 new species described are *P. osborni* and *P. bassiae*. Records and descriptions of hosts are given also for *P. kochiae*, *Uromyces atriplicis*, *U. vesiculosus*. Hosts are listed for *P. aucta*, *P. bromina*, *P. cacao*, *P. calotidis*, *P. dampiera*, *P. graminis*, *P. lolii*, *P. morrisoni*, *U. salsolae*, *U. notabile*, *U. tepperianum*, *Cintractia distichlydis*, *Sorosporium piluliformis*, *Tilletia fusca*, *Ustilago bromivora*, *Erysiphe cichoraccarum*, *E. graminis*, *Cystopus candidus*, *Peronospora parasitica*.—E. N. Munns.

8562. SARTORY, A., ET L. MAIRE. Les champignons vénéneux. [Poisonous mushrooms.] 251 p. col. pl. Libraire Le François: Paris, 1921.

8563. SARTORY, A., ET L. MAIRE. Synopsis du genre *Inocybe*. 246 p. 2 pl. E. le François: Paris, 1923.

8564. SAWADA, KANEYASHI. [Descriptive catalogue of the Formosan fungi.] Part II. Dept. Agric. Govt. Inst. Formosa Rept. 2: (in Japanese) 1923.

8565. SCHAFFER, JULIUS. Pilzbestimmung und Forschung. [Mushroom determination and investigation.] Zeitschr. Pilzkunde 4²: 1925.

8566. SCHAFFER, JULIUS. Über Sauerkraut- und Selleriepilz. [Sauerkraut and celery mushrooms.] Zeitschr. Pilzkunde 5³⁻⁴: 1925.—A form of *Trichotoma album* described here has the odor of sauerkraut whereas the type species smells like *T. sulfureum*. A new species; *T. apium*, is described, which resembles *T. georgii* but smells like celery, rather than like flour. —Author (transl.).

8567. SCHAFFER, JULIUS. Unterscheidungsmerkmale bei Täublingen. [Marks of differentiation among mushrooms.] Zeitschr. Pilzkunde 3²: 1923.

8568. SCHEPPE, W. M. *Torula* infection in man. Amer. Jour. Med. Sci. 167: 91-107. 1924.—The disease is caused by a small yeast, 1-13 μ in diameter, which reproduces by budding, forms no mycelium, and is classified with the monilia, oidium, and dematiu yeasts. It grows on lactic acid media, does not ferment carbohydrates, and does equally well at room and incubator temperatures. It attacks the lungs (stimulating tuberculosis) and the central nervous system most frequently. Only ten other reports could be identified as torulosis, although the author believes the incidence is greater.—G. M. C. (Contrib. by Absts. of Bact.).

8569. SCHERFFEL, A. Endophytische Phycomyceten-Parasiten der Bacillariaceen und einige neue Monaden. Ein Beitrag zur Phylogenie der Oömyceten (Schröter). [Endophytic phycomycete parasites of the Bacillariaceae and several new monads. A contribution to the phylogeny of the Oömycetes.] Arch. Protistenk. 52: 1-141. 5 pl. 1925.—The article includes 222 figures, and in the extensive review of the literature about 80 references are cited. For each parasitic species, diagnosis, hosts, geographical location and references to literature are given. References to phylogenetic problems are scattered throughout. The following species are described: *Olpidium gillii* De Wildeman, *O. lauderieae* Gran., *Ectrogella bacillariacearum* Zopf., *E. monostoma* n. sp., *E. gomphonematis* n. sp., *E. licmophorae* n. sp., *E. perforans* Petersen, *Aphanomycopsis bacillariacearum* n. gen. n. sp., *Lagenidium cyclotellae* n. sp., *L. enecans* Zopf., *L. brachystomum* n. sp., *L. sp.* (n. sp.?), *Aphelidium melosirae* Scherff., *A. tribonemae* n. sp., *A. chaetophorae* n. sp., *Amoeboaphelidium achmanthidis* n. gen. n. sp., *Apheliidiopsis epithemiae* n. gen. n. sp., *Pseudospora leptoderma* n. sp., *P. (?) myzocystioides* n. sp., *Pseudosporopsis bacillariacearum* (Zopf.) Scherff., *P. rotatoriorum* n. sp., *Amylophagus algarum* n. gen. n. sp., *Endospora ovalis* n. gen. n. sp., *Ectobiella bambekii* de Br., *E. plateanvi* de Br., *Olpidiopsis oedogoniorum* (De Wild.) Scherff., *Lagenidium oedogonii* Scherff.—R. P. Hall.

8570. SCHERFFEL, A. Zur Sexualität der Chytrideen. [Sexuality of the Chytrideae.] Arch. Protistenk. 53: 1-58. 2 pl. 1925.

8571. SCHIFFNER, V. Über einige kritische Boletus-formen. [Some critical Boletus forms.] Zeitschr. Pilzkunde 1: 70-72. 1922.

8572. SCOTT, G. A. Cultural characteristics of certain *Colletotrichum* spp. Rept. Quebec. Soc. Plants Protect. 16: 123-137. 5 pl., 4 fig. 1924.—A comparative study was made of 6 cultures of *Colletotrichum* on potato, from various sources. Type and rate of growth, salt requirements, pH reactions, morphological and physiological characteristics, effect of temperature, light and CO₂ were studied for each culture, with the result that they appeared to be identical.—J. E. Machacek.

8573. SINGER, R. *Collybia velutipes* (Curt.) nov. f. *aestivalis* und das periodische Pilzwachstum in den vier Jahreszeiten. [*C. velutipes* m. f. *aestivalis* and the periodic fungus growth of four years.] Zeitschr. Pilzkunde 1: 40-41. 1922.

8574. SINGER, R. Über die Gattung *Psalliota*. [The genus *Psalliota*.] Zeitschr. Pilzkunde 1: 21-24. 1922.

8575. SOEHNER, ERT. Cui bonum? *Inocybe Bongardii* Weinm.—*Inocybe lateraria* Rick.? Zeitschr. Pilzkunde 4: 3-8. 1925.

8576. SOEHNER, ERT. *Hymenogaster caerulescens* (spec. nov.). Zeitschr. Pilzkunde 1: 6-8. 8 fig. 1922.

8577. SPEGAZZINI, CARLOS. Algunos hongos de Tierra del Fuego. [Some Fungi of Tierra del Fuego.] Physis 7: 7-23. 7 fig. 1923.—From collections made in Tierra del Fuego in January, 1922, by the author's daughter, Etile Spegazzini, are reported 23 fungi. All are accompanied by precise notes of occurrence, and many are described both in Latin and Spanish. Among them is the new genus, *Dictyochaeta*, and the following new species and forms: *AcrospERMUM* (?) *antennariicola*, *Agyrium subantarcticum*, *Antennaria subantarctica*, *Calospora etilis*, *Chaetostroma subantarcticum*, *Cladosporium cyttariicolum*, *Dictyochaeta fuegiana*, *Helotium pergracile*, *Heterobotrys antarctica*, *Humaria etilis*, *Penicillium verticilliferum*, *Phacidium* (?) *subantarcticum*, and *Zignoella subantarctica*.—F. W. Pennell.

8578. SPEGAZZINI, CARLOS. Algunos honguitos portorriqueños. [Some Porto Rico Fungi.] Bol. Acad. Nac. Cienc. Cordoba [Argentina] 26: 335-368. 8 fig. 1924.—32 fungi are reported from Porto Rico, each with note of occurrence and often detailed description. Among these are the following new genera: *Amphinectria*, *Hypasteridium*, *Lembosidium*, *Meliolidium*, *Melioliphila*, *Metasteridium*, *Monospermella*, *Micropeltidium*, *Parasteridium*, *Scolecopeltella*, *Stevensula* and *Subiculicola*. Also the following new species and forms are described: *Amphinectria portoricensis*, *Asbolisia portoricensis*, *Asteridium portoricense*, *Dothidella andiricola*, *Lembosidium portoricense*, *Meliolidium portoricense*, *Monospermella portoricensis*, *Morenoella portoricensis*, *Micropeltidium monense*, *M. portoricense*, *Napicladium portoricense*, *Phyllachora orbicularis*, *Phyllosticta desmodiiphila*, *Puiggarrinula ichannthi*, *Scolecopeltella microcarpa*, *S. portoricensis*, *Scolecopeltis pachyasca*, *S. portoricensis*, *Stevensula monensis*, and *Trichomerium portoricense*. New combinations are made in *Amphinectria*, *Melioliphila*, and *Subiculicola*. The following new combinations are made: *Amphinectria erubescens* (Dsm.) Speg., *Melioliphila graminicola* (Stev.) Speg. (*Calonectria graminicola* Stev.), and *Subiculicola ambigua* (Speg.) Speg. (*Calonectria ambigua* Speg.).—F. W. Pennell.

8579. SPEGAZZINI, CARLOS. Breve nota sobre Uredinales Berberidicolas sudamericanas. [Brief note on South American Uredinales living on Berberis.] Rev. Chilena Hist. Nat. 25: 263-279. 2 pl. 1921.—After giving a chronological recension of the South American Uredinales parasitic on *Berberis*, the author first compares in a table the teleutospore characters of the species of *Puccinia*: *P. antarctica* Speg., *P. barri-araeae* Diet. & Ngr., *P. berberidis* Mgn., *P. meyeri alberti* Mgn., *P. naumanniana* (Mgn.) Ngr., and *P. stolpiana* (Mgn.) Diet. & Ngr., the 1st and 3rd of which are described in detail. Next he names and briefly discusses the 4 species that (having been described from uredospores) have been placed in the genus *Uredo*. Then he lists and much more fully describes the 6 species that (having been described from aeciospores) have been placed in the genus *Aecidium*. Finally, he assigns all the forms considered to 2 species, for each of which synonymy is given, *Puccinia berberidis* Mntgn. and *P. magellanica* (Brk.) Speg.—F. W. Pennell.

8580. SPEGAZZINI, CARLOS. *Cryptogamae nonnullae fuegianae*. In "Resultados de la primera expedición a Tierra del Fuego (1921) enviada por la facultad de ciencias exactas, físicas y naturales de la Universidad Nacional de Buenos Aires. [Results of the first expedition to Tierra del Fuego (1921) sent by the faculty of exact, physical and natural sciences of the National University of Buenos Aires.] Anal. Soc. Cient. Argentina 94: 59-85. 6 fig. 1922. —In a foot-note at the commencement of this article Martin Doello-Jurado, director, outlines the work of the expedition to Magallanes and Tierra del Fuego, January to April, 1921. On Doello-Jurado's identifications, C. Spegazzini reports as obtained, 9 species of Musci and 4 species of Hepaticae. On his own identifications C. Spegazzini then reports 21 species of Lichenes; 33 species of Fungi, among which the following are new: *Aparaphysaria doelloi* n. gen., n. sp., *Geomorium fuegianum* n. gen. and n. sp., *Lachnea doelloi*, *Tricholoma pusillisporum*, and *T. umbrinellum*; and 10 species of Algae. Throughout, records of habitat are given, and often descriptive observations, the fungus, *Cyttaria darwini* Berk., being very fully discussed. —F. W. Pennell.

8581. SPEGAZZINI, CARLOS. *Dos Micromicetos chilenos nuevos*. [Two new Chilean Micromycetes.] Rev. Chil. Hist. Nat. 24: 12-15. 1 pl. 1920.—A new genus, *Porterula*, and 2 new species, *P. alstroemeriae* and *Melanconiopsis elzoi*, are described.—F. W. Pennell.

8582. SPEGAZZINI, CARLOS. *Gasteromycetea americana digna de constituir un nuevo genero*. [An American Gasteromycete worthy of being constituted a new genus.] Rev. Chilena Hist. Nat. 24: 161-164. 1920; 25: 77-78. 1921.—*Mycenastrum fragile* Lev. is redescribed with notes of its occurrence through Argentina and Chile. Reason is shown for its exclusion from *Calvatia*, *Lycoperdon*, *Mycenastrum* and *Scleroderma*, genera with which it has been associated by various authors.—In the 2nd part of the paper it is described as a new genus, *Pila*, with the new combination, *P. fragilis* (Lev.) Speg.—F. W. Pennell.

8583. SPEGAZZINI, CARLOS. *Honguillos exóticos*. [Exotic minute fungi.] Bol. Acad. Nac. Cienc. Cordoba [Argentina] 26: 369-403. 12 fig. 1924.—42 fungi from various parts of the world are discussed, with notes of occurrence, and usually with detailed descriptions, both in Latin and Spanish. Among these are the following new genera: *Cavaraella*, based upon *C. micraspis* (B. & C.) Speg. (*Rhytisma micraspis* B. & C.) from Cuba; *Clypeolina*, based upon *C. cubensis* Speg. from Cuba; *Comesella*, based upon *C. anomala* (B. & C.) Speg. (*Dothidea anomala* B. & C.) from Cuba; *Phaeocapdinula*, based upon *P. paulistana* Speg. from Brazil; and *Wrightiella atramentaria* (B. & C.) Speg. (*Rhytisma atramentarium* B. & C.) from Cuba. Beside these the following new species and forms are described: *Coniothyrium lauricola* from Brazil; *Meliola boninensis* from the Bonin Islands; *M. nicaraguensis* from Nicaragua; *Microphyma medium* from Brazil; *Phyllachora wrightiana* from Cuba; *Phyllosticta buddleicola* from Cape of Good Hope; *Sclerotium sacidioides* from Virginia.—F. W. Pennell.

8584. SPEGAZZINI, CARLOS. *Micromycetes nonnulli brasilienses*. Anal. Soc. Cient. Argentina 93: 111-118. 1 pl. 1922.—Ten species of minute fungi were discovered on specimens of *Acacia* sent by Ferdinando Silviera from Brazil. The account of these is throughout in Latin, stating habitat, detailed descriptions and for 9 new species and forms, special diagnoses. These are: *Arthrobothryum alemquerense*, *Cercospora alemquerensis*, *Meliola acaciarum*, *Parapeltella minuscula*, *Pestalozzia acaciicola*, *Phyllosticta silveirae*, *Sphaerella silveirae*, *Sphaerophragmium silveirae* and *Uredo alemquerensis*.—F. W. Pennell.

8585. SPEGAZZINI, CARLOS. *Mycetes Chilenses*. Bol. Acad. Nac. Cienc. Cordoba [Argentina] 25: 1-124. 7 fig. 1921.—Based upon material submitted by various collectors, the author records, with notes of habitat, observations on structure, and frequent diagnoses, 232 species of fungi from Chile. Among these are the new genera: *Campoa*, *Ectosphaeria*, *Jaffuela*, *Mitopeltis* and *Trotterula*; and the following new species and forms: *Aposphaeria jubaeae*, *Brefeldiella* (?) *chilensis*, *Calothyriolum jaffuelianum*, *Camarosporium menziesi*, *Campoa pulcherrima*, *Capnodinula costesi*, *Cercospora* (?) *lingue*, *Chaetodiplodia costesi*, *Claudopus chilensis*, *Clavaria campoi*, *C. pulverulento-rosea*, *Coccobotrys chilensis*, *Coniosporium microleucurum*, *Coniothyrium peumi*, *Cordella* (?) *rubicola*, *Cortinarius campoi*, *Crepidotus zero-toides*, *Cryptosphaerella podanthi*, *Cyphella* (?) *stilboidea*, *Diaporthe aelozici*, *D. jaffueli*, *D. leuceriicola*, *Didymella jaffueli*, *Diplodia piricola*, *Disciseda macrospora*, *Dothiorella chilensis*, *Ectosphaeria costesi*, *Eutypa podanthi*, *Eutypella jaffueliana*, *Fabrea chilensis*, *Fistulina endo-*

xantha, *Gloniella chilensis*, *G. gilliesi*, *G. (?) jaffueli*, *Glonium costesi*, *Helminthosporium suboliaceum*, *Helotium megalosporium*, *Hendersonia juglandina*, *Heteropatella chilensis*, *Hypozydon circostomum*, *H. porteri*, *Isothea chilensis*, *Jaffuela chilensis*, *Leptosphaeria flotoviae*, *L. jubaeae*, *Leptostroma jubaeae*, *Leptothyrium nothofagi*, *Lophiotrema chilense*, *Macrophoma miersi*, *M. porteri*, *Marsonia flourensiae*, *Massariella trevoae*, *Meliola chilensis*, *Melomastia chilensis*, **Metasphaeria aetoxici*, *M. caldcluviae*, *M. (?) costesi*, *M. jaffueli*, *Microthyrium litorale*, *Mitopeltis chilensis*, *Monochaetia miersi*, *Montagnella chilensis*, *Mycena copriniformis*, *M. marilauensis*, *M. micromamma*, *M. obtusiceps*, *M. ursina*, *Myiocopron litorale*, *Naucoria (?) marilauensis*, *Nidularia campoi*, *Omphalia pergracilis*, *Panus stipticoides*, *Phaeosperma gilliesi*, *Phoma juglandicola*, *P. voqui*, *Phyllosticta costesi*, *P. jaffueli*, *P. raphithamni*, *P. winteri*, *Plodospora coprogena*, *Psathyrella chilensis*, *Pterula campoi*, *Puccinia jaffueliana*, *Rosellinia chusqueae*, *R. costesi*, *R. pseudhypozydon*, *Septoria campoi*, *S. jaffueli*, *S. litreae*, *S. loasae*, *S. podanthi*, *Sphaerella baccharidiphila*, *S. campoi*, *S. jaffueli*, *S. myrtilloides*, *S. (?) pataguae*, *S. phaceliophila*, *S. rhodostacheos*, *Sphaeropsis oligosperma*, *Stereum (?) hymenoglium*, *Stropharia chilensis*, *Teichospora (?) perpusilla*, *Trochila jaffueli*, *Trotterula chilensis*, *Tubercularia rosella*, *Tuberculina jaffueli*, *Uromyces costesianus*, *Valsa juglandicola*, *Vermicularia leptosperma*, *Zignoella rhodostacheos*, *Zukalia costesi*.—F. W. Pennell.

8586. SPEGAZZINI, CARLOS. Quinta contribución a la micología chilena. [Fifth contribution to Chilean mycology.] Rev. Chilena Hist. Nat. 27: 54-62. 1 pl. 1923.—Descriptions and notes of occurrence are given of the following fungi: *Aecidium magellanicum* Brk. f. *ramicola*, *Antennaria pannosa* Brk.?, *Corynelia oreophila* (Speg.) Mrt-Fitzp., *Gloesporium guevinae* Speg. n. f., *Melanomma acanthophilum* Speg. n. sp., *Microphyma myocopron* Speg. n. sp., *Phyllosticta crinodendri* Speg. n. f., *Pleospora cereicola majuscula* Speg. n. var., *Puccinia perforans* Mntgn., and *Xylaria grammica* Mntgn.—F. W. Pennell.

8587. SPEGAZZINI, CARLOS. Séptima contribución a la micología chilena. [Seventh contribution to Chilean mycology.] Rev. Chilena Hist. Nat. 29: 58-64. 1 fig. 1925.—Descriptions and notes of occurrence are given for the following Chilean fungi: *Coleosporium senecionis* (Prs.) Fr., *Cryptosphaerina (?) heterospora* Speg. n. sp., *Marasmius eburneus chilensis* Speg. n. var., *Polythrincium trifolii* Kunze, *Rhytidhysterium rufulum* (Spreng.) Speg. n. comb. [*Hysterium rufulum* Spreng.], and *Uromyces johowi* Diet & Neger.—F. W. Pennell.

8588. SPEGAZZINI, CARLOS. Sexta contribución a la micología chilena. [Sixth contribution to Chilean mycology.] Rev. Chilena Hist. Nat. 28: 26-30. 1 pl. 1924.—Descriptions and notes of occurrence are given for the following Chilean fungi: *Coryneum monochaetoides* Speg. n. f., *Cytospora chrysosperma* (Prs.) Fr., *Merulius chilensis* Speg. n. sp., and *Sphaerella (?) litreae* Speg. n. sp.—F. W. Pennell.

8589. STEJSKAL. Volkstümliche Pilzaufklärung. [Popular mushroom determination.] Zeitschr. Pilzkunde 4: 80-82. 1925.

8590. STEVENS, FRANK LINCOLN. Hawaiian Fungi. Bernice P. Bishop Museum Bull. 19. 1-189. 10 pl., 35 fig. 1925.—The author has here recorded all species of fungi reported by earlier collectors of Hawaiian fungi as well as those of his own collections made during 4½ months of 1921 and all collections in the Bishop Museum, in the Hawaiian Agricultural Experiment Station, and in Lyon's private herbarium, except certain higher fungi which were sent E. A. Burt for identification and which have already been reported in a publication by Burt (see Bot. Abst. 13, Entry 3609). In the present publication 1 subfamily, 18 genera, 153 species, and 1 variety are described as new and a further large number are reported here for the first time from the Hawaiian Islands. The identifications and descriptions of new species are mostly by Stevens, his students and associates; but a few groups are reported by specialists—*Questieria* by Arnaud, rusts by Arthur, smuts by Clinton, Myxomycetes by Mary E. Currie, and several miscellaneous forms by H. Sydow. The forms new to science are distributed by orders as follows: Pezizales—*Dasyscypha sadleriae* Stevens and Young; Dothidiales—*Yoshinagella polymorpha* Lyon, *Y. polymorpha* Lyon var. *pauciseta* Stevens, *Y. nuda* Stevens, *Pauahia* Stevens n. gen., *P. sideroxyli* Stevens, *Tributia minima* Stevens & Weedon, *Actinodothidopsis* Stevens n. gen., *A. coprosmae* Stevens, *Schizochora pandani* Stevens, *Phyllachora freycinetiae* Stevens, and *Oligostroma suttoniae* Stevens; Perisporiales—*Meliola lobeliae* Stevens, *M. vaccinii* Stevens, *M. kaduae* Stevens, *M. alyxiae* Stevens, *M. juddiana* Stevens, *M. koae*

Stevens, *M. peleae* Stevens, *M. sideroxyli* Stevens, *M. lyoni* Stevens, *M. hawaiiensis* Stevens, *M. morbosa* Stevens, *M. gregoriana* Stevens, *M. osmanthi* Stevens, *M. kauaiensis* Stevens, *M. dracaenae* Stevens, *Irene splendens* Stevens, *I. cheirodendronis* Stevens, *I. cyrtandrae* Stevens, *I. scaevolicola* Stevens, *Meliolina sydowniana* Stevens, *Amazonia perrottetiae* Stevens, *A. ohianus* Stevens, *Actinodothis suttoniae* Stevens, *A. perrottetiae* Stevens, *Antennellina* Mendoza n. gen., *A. hawaiiensis* Mendoza, *Chaetothyrium straussiae* Mendoza, *C. hawaiiensis* Mendoza, *O. magniferae* Mendoza, *Limacinopsis* Mendoza n. gen., *L. rollandiae* Mendoza, *Limaciniella* Mendoza n. gen., *L. psidii* Mendoza, *Phragmocapnia smilacina* Mendoza, *Phaeosaccardinula morindae* Mendoza, and 14 forms of Capnoidaceae separated upon characters of mycelium, setae, conidiophores, conidia, and pyrenidia but not named because of the absence of perithecia; Hemisphaeriales—*Aulacostroma osmanthi* Stevens & Ryan, *Polystemella kaduae* Stevens & Ryan, *Pluriporus* Stevens & Ryan n. gen., *P. gouldiae* Stevens & Ryan, *Peltella freycinetiae* Stevens & Ryan, *Seynesia atkinsonii* Stevens & Ryan, *Seynesiopeltis* Stevens & Ryan n. gen., *S. tetraplasandrae* Stevens & Ryan, *Calothyriella osmanthi* Stevens & Ryan, *Calothyrium suttoniae* Stevens & Ryan, *C. osmanthi* Stevens & Ryan, *Beelia* Stevens & Ryan n. gen., *B. suttoniae* Stevens & Ryan, *Calothyriopeltis* Stevens & Ryan n. gen., *C. scaevolae* Stevens & Ryan, *C. clermontiae* Stevens & Ryan, *C. metrosideri* Stevens & Ryan, *Clypeolella clermontiae* Stevens & Ryan, *Asterina gouldiae* Stevens & Ryan, *A. kauaiensis* Stevens & Ryan, *A. clermontiae* Stevens & Ryan, *A. phyllostegiae* Stevens & Ryan, *A. suttoniae* Stevens & Ryan, *A. lobeliae* Stevens & Ryan, *Asterinella mabae* Stevens & Ryan, *Lembosia eucalypti* Stevens & Ryan, *Echidnodela cocculi* Stevens & Ryan, *E. mabae* Stevens & Ryan, *E. riallardiae* Stevens & Ryan, *Echidnodes pisoniae* Stevens & Ryan, *Aulographella baumeae* Stevens & Ryan, *Questieria euphorbiae* Arnaud, *Trichopeltis rhyacoides* Stevens, *Enthallopyncnidium* Stevens n. gen., *E. gouldiae* Stevens, *Trichothallus* Stevens n. gen., *T. hawaiiensis* Stevens, *Microthyriella hibisci* Stevens; GYMNOPELTINEAE Stevens & Guba n. sub. fam., *Hexagonella* Stevens & Guba n. gen., *H. peleae* Stevens & Guba, *Anomothallus* Stevens n. gen., *A. erraticus* Stevens; Sphaeriales—*Rosellinia citrififormis* Stevens & Weedon, *Xenolophium* Syd. n. gen., *X. leve* Syd., *X. verrucosum* Syd., *Massalongiella canavaliae* Stevens & Young, *Lageniforma* Plunkett n. gen., *L. bambusae* Plunkett, *Guignardia alyxiae* Stevens, *G. jussiaeae* Stevens, *G. musae* Stevens, *Mycosphaerella atrocarpi* Stevens & Young, *M. cyaneae* Stevens & Young, *M. dianellae* Stevens & Young, *M. freycinetiae* Stevens & Young, *M. hawaiiensis* Stevens & Young, *M. hedychii* Stevens & Young, *M. kaduae* Stevens & Young, *M. metrosideri* Stevens & Young, *M. scaevolae* Stevens & Young, *Phaeosphaerella dianellae* Stevens, *P. mangiferae* Stevens & Weedon, *P. hawaiiensis* Stevens & McMunn, *Sphaerulina cibotii* Stevens & Guba, *S. ipomoeae* Stevens, *Metasphaeria hawaiiensis* Stevens & Young, *Clypeosphaeria stevensii* Syd., *Lyoniella* Syd. n. gen., *L. neurophilla* Syd.; Uredinales—*Pucciniastrum wikstroemiae* Arthur, *Uromyces koae* Arthur, *U. alyxiae* Arthur, *Uredo hawaiiensis* Arthur, *U. stevensii* Arthur; Sphaeropsidales—*Phyllosticta casimiroae* Stevens & Weedon, *P. codiae* Stevens & Young, *P. colocasiophila* Weedon, *P. erectis* Stevens & Young, *P. heliconiae* Stevens & Young, *P. musae* Stevens & Young, *P. musicola* Stevens & Young, *P. pothicola* Weedon, *P. cordylinophila* Young, *P. zingiberis* Stevens & Ryan, *Dendrophoma gouldiae* Stevens & Plunkett, *Coniothyrium dracaenae* Stevens & Weedon, *Harknessia gunnerae* Stevens & Young, *H. hawaiiensis* Stevens & Young, *Sphaeropsis gouldiae* Stevens & Plunkett, *Stagonospora erythrinae* Stevens & Young, *Septoria clermontiae* Stevens & Young, *S. gouldiae* Stevens & Young, *S. hawaiiensis* Stevens & Plunkett, *S. rollandiae* Stevens & Young, *Rhabdospora pittospori* Stevens & Young, *Clypeoseptoria* Stevens & Young n. gen., *C. rockii* Stevens & Young, *Leptothyrium sidae* Stevens & Young, *L. pothi* Weedon, *L. glycheniae* Stevens & Young, *Pirostoma dianellae* Stevens & Young; Melanconiales—*Gloeosporium barringtoniae* Stevens & Young, *G. peleae* Stevens, *Colletotrichum dianellae* Stevens & Young, *C. passiflorae* Stevens & Young; Moniliales—*Ramularia ipomoeae* Stevens, *R. nephrolepis* Stevens, *R. microlepieae* Stevens, *Helminthosporium cibotii* Stevens & Weedon, *H. gleicheniae* Stevens & Glick, *Alternaria sonchi* Stevens, *Cercospora arctii* Stevens, *C. agerati* Stevens, *C. pipturi* Stevens, *C. tectoniae* Stevens, *Excioconidium* Plunkett n. gen., *E. cibotii* Plunkett, *Graphium dubautiae* Stevens & Weedon.—Some groups are discussed critically and keys to various groups are scattered throughout the text. At the close are given "Hosts of Hawaiian fungi and the fungi on them," "Hosts of Hawaiian rusts" indicating the endemic,

the indigenous, and the recent species, "Index to fungi," and a bibliography of 212 citations.—*B. B. Higgins.*

8591. STREIDER, J. W., AND R. N. McCLELLAN. Molds in bakeries. Baking Technology 18: 230-235. 1922.

8592. [VASSILJEVSKII, N. I.] ВАСИЛЬЕВСКИЙ, Н. И. К морфологии и биологии *Ovularia* на видах *Alchimilla*. (German summary.) [A contribution to morphology and biology of *Ovularia* on species of *Alchimilla*.] Болезни Растений, Вест. Отд. Фитои. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 18-28. 1 fig. 1925.—The author finds that on the species of *Alchimilla* occur 2 different *Ovularias*, one mainly with round and oval and the other with oblong conidia. The first answers description of *O. Schröteri*; the other, that of *O. haplospora* and *O. alpina*. The other characters—color of the spots, production of conidia in chains, and species of the host—are not important. Upon some of the species of *Alchimilla* leaves affected with *O. Schröteri* in the fall, the author found dark races, pycnidia with microconidia and sclerotia; and in the spring he found perithecia which he considers to be *Mycosphaerella alchimillicola* n. sp. A Latin description of this fungus is given. The connection between the perithecial form and *Ovularia* is based upon their association, likeness of their cultures and infection experiments with the ascospores which gave typical *O. Schröteri*.—*C. D. Sherbakoff.*

8593. VELENOVSKÝ, J. Nová strmělka (*Clitocybe gigantea* sp. n.).—Mykol. 1924: 120-122. 1 fig. 1924.

8594. VELENOVSKÝ, J. Zajímavý nový druh rodu *Naucoria*. (*Naucoria sclerotina* sp. n.) Mykol. 1924: 144-145, 1 fig. 1924.

8595. VILHELM, JAN. O kratologii hub. [Teratology in the fungi.] Čas. Čes. Houb. 1924: 61-62. 1924.—The author distinguishes 2 types of morphologic abnormalities which he has found in fungi. The first are the abnormalities, capable of being treated according to the principles of morphology. The others are monstrosities. The author gives examples of both sorts.—*From abst. in Preslia (transl.).*

8596. WEESE, J. Ueber einen Parasiten der Vanille. [A parasite of *Vanilla*.] Mitteil. Bot. Lab. Tech. Hochschule Wien 1: 22-31. 1924.—In 1902 Zimmerman reported on several diseases which were observed on *Vanilla* in the Botanical Garden of Buitenzorg, and which caused death of the stems. He considered a fungus to be responsible, found as mycelium within the stem and which later produced spores, including a perfect stage. It was determined as *Nectria vanillae*, n. sp. Later Hennings described a *Nectria* on leaves of *Vanilla*, also collected by Zimmerman in Buitenzorg, which he called *N. vanillicola*. The author considers these 2 forms to be identical and to correspond with *N. tjibodensis* Penz. & Sacc.—Based on their descriptions, the conclusion is reached that the latter is also identical with *N. flavo-lanata* Berk. & Br. from Ceylon. A comprehensive study indicates that the various *Nectrias* occurring on *Vanilla* are not limited to this host, but occur on other plants as *Ficus elastica*, cacao shells, etc., and have been described under various names. As probably identical, and agreeing with *N. flavo-lanata* are to be considered also: *Nectriella flocculenta* P. Henn., *Calonectria sulphurella* Starb., *Nectria Iriarteae* P. Henn., *N. lutea-pilosa* A. Zimm., *N. coccinea ochracea* P. Henn. and *N. Glyricidia* Rehm.—*H. Cammerloher (transl.).*

8597. WERDERMANN, E. *Corollospora maritima* Werd., ein salzliebender Pilz von der Nordseeküste. [*C. maritima* Werd., a salt-loving fungus from the coast of the North Sea.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 248-250. 9 fig. 1922.—*Corollospora maritima* n. gen. et n. sp. is described from specimens collected by Lindau in 1918 on the Island of Büsum in the North Sea.—*F. W. Pennell.*

8598. WERDERMANN, E. *Taphrina reichei*, n. sp., ein neuer mexikanischer Hexenbesen. [*Taphrina reichei* n. sp., a new Mexican witches broom.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 221, 222. 1922.—*Taphrina reichei*, collected by Reiche in Mexico on leaves and branches of *Prunus capollin*, is described.—*F. W. Pennell.*

8599. WRÓBLEWSKI, A. Spis grzybów zebranych przez Marjana Raciborskiego w okolicy Krakowa i w Tatrach w latach 1883 i 1890. [Fungi collected by M. Raciborski in the years 1883 and 1890 near Cracow and in the Tatra Mountains.] Acta Soc. Bot. Poloniae 3¹: 29-41. 1925.—A list of the species collected by M. Raciborski, numbering 242, is given; 1 species, *Aecidium raciborskii* Wróbl., is described as new.—*Hanna Czechtz.*

LICHENS

8600. BOULY DE LESDAIN, M. Lichens du Maroc recueilles par M. Mouret en 1912. Mem. Soc. Sci. Nat. Maroc. 8: 290-299. 1924 [1925].—A list of 135 species or varieties, of which the following are described by the author as new, diagnoses being given: *Heppia Mouretii*, *Heppia maroccana*, *Caloplaca Mouretii*, *Diphtrator maroccana*, *Opegrapha rosea*, *Opegrapha ramosa*, *Verrucaria macrostoma* f. *grisea* and var. *Mouretii*, *Cempholemma Mouretii*. There is appended to this list a brief enumeration of lichens collected in Morocco in 1921 by R. Maire.—R. Douin (transl.).

8601. BOULY DE LESDAIN, M. Notes lichénologiques, XXII. Bull. Soc. Bot. France 72: 787-792. 1925.—Lists and descriptions of new species from southern France: *Cyphelium mediterraneum*, *Pyrine saxicola*, *Lecanosa jeanjani*, *Cyalolechia fusca*, *Pertusaria gallica*, *Pertusaria mairei*, *Catillaria Harbaronis*, *Buellia Crozalsiana*, *Bilimbia subcoprodes*, *Arthothelium Burolleti*, *Verrucaria leadcoides* var. *minuta* f. *globulosa*, and *Polyblastiopsis subericola* are described by the writer as new.—R. Douin (transl.).

8602. DU RIETZ, G. EINAR. Die europäischen Arten der Gyrophora "anthracina"-Gruppe. [European species of the Gyrophora "anthracina"-group.] Ark. för Bot. 19¹²: 1-14. 1925.—A revision of this group shows that the Scandinavian "*Gyrophora anthracina*," which also occurs in Scotland and Greenland, differs from the alpine forms and constitutes a new species; further that (besides *G. reticulata*), 4 different species occur in the Alps, all of which by different authors have been referred to *G. anthracina*, namely, *G. microphylla* (Laur.) Arn., *G. subglabra* Nyl., *G. laevis* (Schaer.) DR. n. comb., and *G. leiocarpa* (DC.) Steud. One of them, *G. leiocarpa*, has recently been found in north Sweden as well. A key to the whole group is given. *G. rigida* (the new species mentioned above) and var. *discissa* (*G. anthracina* f. *discissa* Th. Fr.) are new.—O. Heilborn.

8603. HENCKEL, A. Sur l'hélotisme des lichens. Bull. Inst. Recherches Biol. Sta. Biol. Univ. Perm. 1: 60-64. 1923.

8604. HILITZER, ALFRED. Addenda ad lichenographiam Bohemiae. [Addenda to the lichenography of Bohemia.] Acta Bot. Bohemica 3: 3-15. 1924.—This is a list of 228 species and forms of lichens of Bohemia, from diverse localities (chiefly Šumava, Brdy and the region about Prague.)—From abst. in *Preslia* (transl.).

8605. HILITZER, ALFRED. Enumeratio critica Parmeliacearum Bohemiae. [A critical enumeration of Bohemian Parmeliaceae.] Ann. Mycol. 22: 219-229. 1924.—The author has published the chapters (extracts from his monograph, which is not yet published) in which he sets forth his system of the Parmeliaceae. He describes the species and varieties existing in Bohemia, of which the following are new; *Parmelia physodes* f. *minor*, f. *gracilis*, *P. tubulosa* f. *rugosa*, *P. furfuracea* f. *platyphyllina*, *P. olivacea* f. *pruinosa*, var. *disseata*, *P. crustificans*, *Cetraria glauca* f. *crispata*, *C. islandica* f. *tubaeformis*.—From abst. in *Preslia* (transl.).

8606. HILITZER, ALFRED. Konvergentní formy lišejníků. [Converging forms in the lichens.] Věda Přírodní 4: 140-143. 1923.—The author calls attention to converging forms in the lichens and explains their origin by the influence of external factors. Diverse groups have developed in the same manner. The converging forms may also have had their origin without the influence of external factors and solely because of the influence of variation which plays so great a rôle in all vegetation.—From abst. in *Preslia* (transl.).

8607. LOS, VÁCLAV. Lichenologický ráz Brd. [The lichens of Brdy.] Musej. spis. č. Rokycany. 6: 1-20. 1924.

8608. MAHEU, JACQUES, ET ABEL GILLET. Contribution à l'étude des Lichens du Maroc. [Contribution to our knowledge of the lichens of Morocco.] Mem. Soc. Sci. Nat. Maroc. 8: 279-289. 1924 [1925].—The paper consists of a list of 36 species or varieties collected by the authors in the neighborhood of Casablanca and Tangier in September, 1920. Among the lichens there are 1 new species, *Polyblastia opunticola* Mah. et Gill.; and 4 new varieties, *Physisia leptalea* var. *cyaneella* Mah. et Gill., *Lecanora subfusca* var. *ochracea* Mah. et Gill., *Dirina repanda* var. *crassa* Mah. et Gill., and *Parmelia trichotera* var. *subincana* Mah. et Gill. The authors also describe a lichen, very abundant at Mogador and Agadir, *Teloschistes intricatus* var. *spiniferus* Mah. et Gill.—R. Douin (transl.).

8609. MAHEU, J., ET A. GILLET. Deuxieme contribution à l'étude des lichens du Maroc. [Second contribution to the study of the lichens of Morocco.] Bull. Soc. Bot. France 72: 853-872. 1925.—Of the lichens here discussed the following are new: *Nephromium tangeriense*, *Parmelia subincana*, *P. tinctoria*, *P. saxatilis* var. *glauca*, *Ramalina boulhautiana*.—To this contribution is added a list of mosses and hepatics from Agla.—R. Douin (transl.).

8610. SAVICZ, V. P. Die Cladonien Kamschatkas. [The Cladonias of Kamchatka.] Repert. Spec. Nov. Regni Veg. 19: 337-372. 1924.—An extensive compilation of Cladonias including the following new combination, varieties, and forms is given. *Cladonia Floerkeana* (Fr.) Sommrft. var. *carcata* (Ach.) Nyl. f. *subcarcata*; *C. furcata* (Nuds.) Schrad. var. *Usoni*; *C. crispata* (Ach.) Flot. var. *cetrariae-formis* (Del.) Wain. f. *subascypha*; *C. squamosa* (Scop.) Hoffm. var. *muricella* (Del.) Wain. f. *procera*; *C. turgida* (Ehrh.) Hoffm. f. *foliacioides*, *C. subcariosa* (Nyl.) Wain. var. *subascyphosa*, *C. decorticata* (*C. acuminata* (Ach.) Norrl.); *C. foliata* (Arn.) Wain.; and *C. decorticata* var. *primaria* (Th. Fr.).—R. E. Woodson, Jr.

8611. SUZA, JUDŘICH. [A Sketch of the distribution of lichens in Moravia with regard to the conditions in Europe. A phytogeographical study.] 150 p. University of Masaryk: Brno-Brünn, [Date?].—This paper is essentially a list of the Lichens of Moravia. Host indexes are featured, and the vertical and horizontal distribution of the lichens of Moravia is given. Pages 130 to 141 are devoted to the actual list of lichens; 788 species are recorded, with innumerable forms and varieties. The concluding 8 pages are in English and present a view of the Moravian lichens with respect to their vertical and horizontal distribution. Many species of alpine lichens are noted, and a few arctic forms discovered, but the vast majority of the plants are Continental forms with a wide distribution throughout central Europe.—G. K. Merrill.

8612. SUZA, J. Lišejníky československého Těšínska. (Poznámky lichenogeografické I.) [The lichens of Těšínsko, Czechoslovakia. (Preliminary note.)] Zvl. ot. ze Sbor. Přírodov. Společn. v. Mor. Ostravě, roč. 2: 1-25. 1923.

8613. SUZA, J. Nový zástupce arktické vegetace lišejníkové na Vysokých Tatrách (*Nephroma expallidum* Nyl.). [A new representative of the arctic lichen vegetation in the mountains of the High Tatra [*Nephroma expallidum* Nyl.] Zvl. ot. z Cas. Mor. Mus. Zem. Noč [Brno] 21: 1-10. 1923.

8614. SUZA, JINDŘICH. Poznámky k epifytické flóře lišejníkové doubrav u Terešvy (Podkarpatská Rus.) [The epiphytic lichens of the oak groves near Terešva (Sub-Carpathian Russia.)] Sborn. Kl. Přírod. v. Brně. Roč. 7: 75-78. 1924.

8615. SUZA, J. *Rinodina oreina* var. *Mougeotioides* (Nyl.) Zahlbr. na Moravě. [*Rhinodina oreina* var. *mougeotioides* of Moravia.] Sbornik klubu přírodovědeckého v. Brně 2: 11-15. 1919.—The author indicates and describes the locality in which this lichen, new for Moravia, was collected.—Valley of the Oslava, gneiss rocks; Valley of Jihlava; rocky banks. He designates the rocks as glacial deposits, and compares the localities in Moravia with those in which the lichen has been found in Bohemia and in the Danube Valley, citing at the same time the Phanerogams which occur in these localities. The work is concluded with some notes on the life history.—From abst. in *Preslia* (transl.).

BACTERIA

8616. ANONYMOUS. Bloody bread—the mystery of the scarlet fungus. Sci. Amer. 133: 337-339. 1 fig. 1925.—Concerns *Erythrobacillus prodigiosus* and some of the early history and superstitions connected with it.—Chas. H. Otis.

8617. BAYNE-JONES, STANHOPE. Club-formation by *Actinomyces hominis* in glucose broth, with a note on *B. actinomycetum-comitans*. Jour. Bact. 10: 569-577. 1 pl. 1925.—Cultures of *Actinomyces hominis* isolated from a closed lesion of a patient suffering from actinomycosis were cultured in glucose agar and glucose broth. They were then fixed, imbedded and stained, and were found to form the typical "clubs" hitherto recorded only in media containing animal fluids. *B. (Bacterium?) actinomycetum-comitans* Klinger was found associated with *Actinomyces hominis*. This association is recorded for the 1st time in the U. S. A.—C. E. Skinner.

8618. BEAUVERIE, J. Sur la formation de corps endogènes dans les cellules de l'*Azotobacter chroococcum*. [The formation of endogenous bodies in the cells of *A. chroococcum*.]

Bull. Soc. Bot. France. 72: 1012-1018. 4 fig. [1925].—The endospores and their different characteristics described by Mencl, Prazmowski, Lohnis; and the flagellate gonides of Dan. H. Jones (1913), have not been observed by the author, or at least the formations to which they correspond have not had the significance for him which they have had for the authors cited above. On the contrary, in the culture which dried a dark Van Dyke brown, the cellular structure was completely modified. It was at first alveolar with the granules of metachromatin at the nodes of the spireme or in the vacuole. While drying, the entire cellular content united into a single spherical body which was found in the center of the cell whose walls soon disappeared. This endogenous body was made up of protoplasm forming a circle or crescent circumscribing a vacuole where the metachromatin is located. In the crescent of cytoplasm a granule of chromatin was disclosed, representing the nucleus. These grains of chromatin were more or less numerous in the normal cell. There were also produced some endogenous bodies about $\frac{1}{3}$ the size of the mother cell. Their membrane was not visible. It seems that they are transitory formations produced on drying and taking on the characteristics of a normal cell, increasing in size on becoming wet. These organisms represent an intermediate stage between the vegetative cell and the spore. Although they doubtless do not possess the high resistance characteristic of spores, with their thick membranes, they have undergone a dehydration which gives them increased resistance. This explains why *Azotobacter* is among those organisms which persist after partial sterilization of the soil.—Author (transl. by E. H. Lally).

8619. BURGESS, A. S. *Leptospirae in tap water*. Proc. Royal Soc. Med. (Sect. Tropical Dis. and Parasitol.) 18: 57-58. 1925.—Organisms morphologically resembling *Leptospira icteroides* and *L. icterohaemorrhagica* were found in tap water at Accra, Gold Coast.—W. C. C. (Contrib. by Absts. Bact.)

8620. CALDERINI, M. *Ricerche sui batteri violacei delle acque*. [Violaceous bacteria of water.] Ann. d'Ig. [Roma] 35: 765-784. 1925.—The author discusses the bacteria of the violaceous group, with descriptions of the species included, and the significance of their presence in water supplies. He concludes that the bacteria of the group are pleomorphic but may be classed in a general way as a single group with 5 distinct subgroups. The presence of these bacteria in water supplies he considers indicative of lack of protection from surface drainage. An extensive bibliography is appended.—F. W. Tilley (Contrib. by Absts. Bact.)

8621. GORINI, COSTANTINO. *Sulla presenza di batteri acidoproteolitici nel suolo e nelle feci e sulla loro circolazione nella natura*. [Distribution of acidoproteolytic bacteria.] Rendiconti R. Ist. Lombardo Sci. e Lett. 55: 415-421. 1922.—Laboratory tests have demonstrated the presence in virgin Arctic polar soil and in the faeces of polar animals, of the acidoproteolytic bacteria found also in inhabited land and in the warm-blooded animals of the temperate zone. The organisms found include bacillar forms of the *Proteus vulgaris* Hauser or *Bacterium vulgare* Lehmann & Neumann group, as well as numerous coccus forms such as *Streptococcus liquefaciens*, *M. pyogenes albus*, *Tetracoccus* sp., and *Micrococcus* E.—Edith K. Cash.

8622. INOUE, Z. *A new method of staining flagella and observations on the morphological changes of flagella, depending upon the age of bacteria*. Sci. Rep. Gov. Inst. Infect. Diseases. Tokyo Imp. Univ. 3: 11-15. 1 pl. 1924.

8623. KHOUVINE, Y. *Digestion de la cellulose par la flore intestinale de l'homme*. [Digestion of cellulose by the intestinal flora of man.] Ann. Inst. Pasteur 37: 711-752. 1923.—*Bacillus cellulosae dissolvens* n. sp. has been isolated from human intestines. It is strictly anaerobic, and attacks only cellulose. Complete morphological and physiological descriptions of the organism are given.—A. G. Plakidas.

8624. KORINEK, JAN. *Sur la variabilité sérologique du B. pneumoniae Friedländer*. [The serologic variability of *B. pneumoniae* Friedländer.] Spisy Vydávané Přírodovědeckou Fakult. Karlovy Univ. 37: 1-16. 1925.

8625. LESBRE, PH., ET ANDRÉ VERDEAU. *Quelques caractères spécifiques du Bacillus fecalis alcaligenes*. [Some specific characters of *Bacillus fecalis alcaligenes*.] Compt. Rend. Soc. Biol. 92: 167-168. 1925.—*B. facalis* lies between the typhoid-paratyphoid and the fluorescent groups according to its serologic reactions. Details of its serologic relations to these groups and to members of its own group are given.—G. F. R. (Contrib. by Absts. Bact.)

8626. LE SOUDIER, ET J. VERGE. *Les formes atypiques du gonocoque*. [Atypical forms of

the gonococcus.] *Compt. Rend. Soc. Biol.* 92: 323-324. 1925.—On artificial media the gonococcus presents a variety of abnormal involution forms. Some strains, however, in spite of many transfers on ascitic agar, egg agar and vitamine agar, will not take such abnormal forms. Others will show these variations within 24 hours; the forms taken vary from large, round, vacuolated, poorly staining cocci, to large diplococci and large tetrads. There seems to be a very direct relation between the atypical forms, the vitality of the organism and its resistance to the destructive outside conditions.—*G. F. R. (Contrib. by Absts. Bact.)*

8627. LÉVY-BRUHL, M. ET P. BORIN. Mise en évidence des capsules du *Pneumococcus* III (*Pneumococcus mucosus*), en milieux liquides non albumineux. [Demonstrating capsules in type III *Pneumococcus* (*Pneumococcus mucosus*), in non-albuminous liquid media.] *Compt. Rend. Soc. Biol.*, 92: 1343-1344. 1925.—Using the China ink method proposed by Borin, the authors were able to stain the capsules of 12 strains of Type III pneumococcus when grown in medium "T" or Martin glucose broth. On solid media the colonies were glistening and of a mucoid nature. The strains were obtained from various sources, pneumonia, ulcer of the cornea and suppurating mastoids. Cultures of representatives of Type I, II and IV did not show capsules by this method.—*G. F. R. (Contrib. by Absts. Bact.)*

8628. MALONE, R. H. A fallacy in the use of Benian's "relief" stain associated with the growth of micro-organisms in two per cent. aqueous solution of congo-red. *Indian Jour. Med. Research* 10: 847-849. 1922-1923.—A capsulated cocco-bacillus resembling the pneumococcus was found by the author growing in aqueous solution of congo-red. In order to avoid error in demonstrating the presence of capsulated micro-organisms, it is suggested that 2% aqueous solution of congo-red be autoclaved and kept in sterile tubes with the addition of 0.5% phenol.—*I. A. B. (Contrib. by Absts. Bact.)*

8629. MÜLLEROVÁ, LYDA. Analyses due "*Mycobacterium lacticola* B perrugosum" *Publ. Facult. Sci. Charles Univ.* 20. 1-19. 1924.

8630. MURRAY, T. J., AND C. E. SKINNER. Differentiation of *B. aerogenes* and *B. coli* of non-fecal origin from *B. coli* of fecal origin. *Proc. Soc. Exp. Biol. and Medicine* 23: 104-106. 1925.

8631. NOBECHI, K. On two strains of cholera vibrio showing no motility. *Sci. Rept. Gov. Inst. Infectious Dis. Tokyo Imp. Univ.* 1: 75-77. 1922.

8632. NOBECHI, K., AND T. ISHIKAWA. On the cholera strains encountered in Japan in 1921. *Sci. Rept. Gov. Inst. for Infectious Dis. Tokyo Imp. Univ.* 1: 79-82. 1922.

8633. NOMURA, J. A new method of classification of Pfeiffer's bacillus by fermentation of carbohydrates. *Sci. Rept. Gov. Inst. Infectious Dis. Tokyo Imp. Univ.* 1: 57-59. 1922.

8634. ORLA-JENSEN, SIGURD. The classification of the lactic acid bacteria. *Proc. World's Dairy Congress* 2: 1123-1127. 1923.—A brief presentation in English of the author's classification of the true lactic acid forming bacteria, a classification based primarily upon their biochemical reactions.—*A. G. B. (Contrib. by Absts. Bact.)*

8635. ROTHER, W. Untersuchungen über den Döderleinschen Scheidenbazillus. [Investigations on Döderlein's "Scheiden" bacillus.] (Diss. Erlangen, 1921.) 27 p. Gustav. Fock: Leipzig, 1922.

8636. SACK, J. Eine grüne Bakterie. [A green Bacterium.] *Centralbl. Bakt. [etc.]* 2 Abt. 65: 113-116. 1925.—A new bacterium, *Bacillus viridi-glaucescens*, distinguished by a blue green color of the cells and spores, was found in various soils. On nutrient agar the organism forms, in 24 hours, large white colonies of a thick slimy consistency. The organism is non-motile, 4-5 × 1.0, gram-positive; each cell contains at both ends 2 blue-green oval shaped spores about 2μ in size. Gelatin is rapidly liquefied, H₂S positive, indol formed abundantly. The blue-green pigment of the cells and spores consists of a mixture of a yellow and blue pigment, the latter crystallizing in the form of platelets.—*S. A. W. (Contrib. by Absts. Bact.)*

8637. SCHOENHOLZ, P., AND K. F. MEYER. Studies on the serologic classification of *B. botulinus*. II. Agglutination. *Jour. Immunol.* 10: 1-53. 1925.—Employing agglutination and the absorption of agglutinin as criteria, the authors in a series of 104 strains investigated, both Type A and Type B, come to the following conclusions, *B. botulinus*, Type A and B, may be divided into at least seven groups. The majority of A strains fall into 2 groups, the B strains into 3 groups. One instance was found in which the toxicological and serological findings did not agree.—*F. M. H. (Contrib. by Absts. Bact.)*

8638. SOSA, HECTOR. Un nuevo medio diferencial para el grupo Eberth-Coli-Paratíficos. [A new differential medium for the Eberthella-Coli-Paratyphoid group.] Rev. Zootec. [Buenos Aires] 12: 141-144. 1925.—The author describes a useful modification of the metallic salt medium and technique used in the Bacteriological Institute of the Argentine Department of Hygiene for the differentiation of the above mentioned types.—H. M. (Contrib. by Absts. Bact.).

8639. STEVENS, J. W. A study of various strains of *Bacillus radicola* from nodules of alfalfa and sweet clover. Soil Sci. 20: 45-66. 1925.—Cultural, serological and physiological studies on 13 strains of *Bacillus radicola* isolated from the nodules of alfalfa and sweet clover are reported. The strains studied could be divided into 2 groups depending upon their ability to tolerate acid, when grown in media of various pH values. Acid was produced by all strains. Serologically they could be divided into 2 groups as distinct as the cross inoculating groups. When legumes were inoculated with the various strains it was found that the quantity of nitrogen fixed by those belonging to the less acid tolerant serological group "A" was always greater than when inoculations were made with stains belonging to the other group.—P. L. G. (Contrib. by Absts. Bact.).

8640. VALTIS, J. Sur la filtrabilité du bacilli tuberculeux à travers les bougies Chamberland. [The filtrability of the tuberculosis bacillus through Chamberland filters.] Ann. Inst. Pasteur. 38: 453-459. 1924.—It appears that filterable forms of *Bacillus tuberculosis* Koch exist. Sputum, pus from a mesenteric tubercular ganglion, and 3-8 days old glycerine bouillon cultures were diluted with physiologic solution, allowed to stay in the incubator for 3 days at 37°C., and then filtered through a Chamberland L₃ filter. The efficiency of the filters was tested by inoculating tubes of Martin's bouillon with a few drops of the filtrate; these invariably remained sterile. But when guinea pigs were inoculated subcutaneously with the same filtrates, they always developed tubercular lesions and became sick, giving positive tuberculine reaction, and the lesions were found to contain tuberculosis bacilli when examined.—A. G. Plakidas.

8641. WIGHT, T. H. TOYNBEE. Notes on *Councilmania Lafleuri*. U. S. Vet. Bur. Med. Bull. 1. 1-4. 1925.—The author considers *Councilmania* and *B. coli* one and the same organism and finds that the budding can be produced in *B. coli* by external causes.—W. C. C. (Contrib. by Absts. Bact.).

8642. WRIGHT, WILLIAM H. The nodule bacteria of soy beans: I. Bacteriology of strains; II. Nitrogen-fixation experiments. Soil Sci. 20: 95-142. 1925.—The author studied 8 strains of *Ps. radicola* from soy beans (*Soja max*) as to morphology, cultural and physiological characteristics, serological relations, and ability to fix nitrogen when growing on the roots of the host plant. Morphologically the strains were identical. Culturally and physiologically 2 general types designated "A" and "B", were described. Serologically the 8 strains could be separated into 4 groups. When plants were inoculated with strains of the 2 types the size, number and distribution of nodules on plants inoculated with strains of type "A," were different from those produced by inoculations with strains of type "B." More than twice as much nitrogen was fixed when strains of type "A" were used as when strains of "B" were used as the inoculum. The differences appeared to be constant.—P. L. G. (Contrib. by Absts. Bact.).

MYXOMYCETES

8643. BRANDZA, MARCEL. Sur l'apparition des Myxomycètes dans la Ville de Bucarest sur des substratums préparés d'avance. [The appearance of Myxomycetes in Bucarest on prepared substrata.] Ann. Sci. Univ. Jassy. 13: 1-2 93-99. 1924.

8644. MESLIN, R. Liste de Myxomycetes observés dans le Département de la Manche. Bull. Soc. Linn. Normandie 7^e Sér. 7: 170-179. 1924.

PALEOBOTANY AND EVOLUTIONARY HISTORY

EDWARD W. BERRY, *Editor*

(See also in this issue Entries 6326, 6395, 6520, 7651, 8121, 8191, 8230, 8276, 8303, 8335, 8447)

8645. AMALITZKY, V. Diagnoses of the new forms of vertebrates and plants from the upper Permian of north Dvina. Bull. Acad. Sci. Russie 16: 329-340. 1 fig. 1922.—An abstract of an unfinished manuscript edited by Karpinsky and largely devoted to vertebrates. The following Permian plants are recorded in association with the former: *Glossopteris indica*, var. *psymaphylloides*, *angustifolia*, *communis* var. *rossica*, *Gangamopteris major*, *cyclopteroides* var. *rossica*. The varieties are all new but are nomina nuda since no descriptions are given.—E. W. Berry.

8646. BAYER, EDVIN, A. J. PETROBK. Příspěvek k fytopaleontologii českého cenomanu. [Contribution to the paleobotany of the Bohemian Cenomanian.] Casopis Musea Král. Českého odd. Přírodov. 93: 74-83. 1919.—The authors describe the following from the Cenomanian sandstone of Sluhý and Mrátín near Měšice: *Dicksonia punctata* Heer, *Krannera mirabilis* Corda, *Ficus mratinensis* n.sp., *Bombax argillaceum* Velen., *Eucalyptus geinitzi* Heer, *Carpolithes petrobokii* n.sp. (which suggests *Isoetes*), and *Pustularia perucensis* n.sp.—E. W. Berry.

8647. BERRY, EDWARD W. A new *Salvinia* from the Eocene. Torreyia 25: 116-118. 4 fig. 1925.—The author describes as new, *Salvinia preauriculata* from material from the Bridger formation, Fremont County, Wyoming and from the Wilcox Eocene of Western Tennessee.—Geo. D. Fuller.

8648. BERRY, E. W. [Rev. of: THOMAS, H. HAMSHAW. The Caytoniales, a new group of angiospermous plants from the Jurassic rocks of Yorkshire. Phil. Trans. Roy. Soc. London. B, 213: 299-363. 5 pl. 1925.] Amer. Nat. 60: 95-96. 1926.—“If Thomas’s conclusions are correct then these middle Jurassic plants help bridge the gap between gymnosperms and angiosperms and introduce us to a type which combines fern-like foliage, and gymnospermous seeds enclosed in angiospermous carpels, a most important discovery.”

8649. BRADLEY, W. H. An oil shale and its microorganisms from the Fuson formation of Wyoming. Amer. Jour. Sci. 8: 228-234. 4 fig. 1924.—Describes the planktonic alga, *Epipolaia corymbus*, as new. This species constitutes about 11% of the rock. In the same oil shale occur hyphae and spores of fungi and pollens and fragments of the tissues of higher plants.—T. J. Fitzpatrick.

8650. BROWNE, ISABEL M. P. A note on *Calamostachys tuberculata* Stbg. New Phytol. 24: 305-308. 1925.—The bundles of the axis of the fructification of *Calamostachys tuberculata* are clearly continuous and the sporangiophores inserted opposite to them and therefore in superposed whorls. The bracts and bract scars are approximately twice as numerous as the bundles and sporangiophores.—I. F. Lewis.

8651. CARPENTIER, A. Sur des empreintes de fructifications recueillies dans plusieurs gisements carbonifères de l'Ouest de la France. [Impressions of fructifications collected from the Carboniferous of western France.] Bull. Soc. Sci. Nat. Ouest France. III. 6: 109-119. 2 pl. 1920.—The author describes and figures the following: Microsporangia of the type of *Diplothea stellata* Kidston and *Lagenospermum bureaui* n.sp. from the lower Carboniferous of Mouzeil, Loire-Inferieure; *Cardiocarpon minimum* n.sp. from the upper Dinantian of Baconniere, Mayenne; *Rhabdocarpus* cf. *subtunicatus* Grand'Eury, *Polypterocarpus latus* n.sp., *Carpolithes* cf. *sulcatus* (Presl) Sternb., *Cyclocarpus* aff. *nummularis* Brongn., *Samaropsis* sp., from the Stephanian stage at St. Pierre-la-Cour, Mayenne.—A. de Puymary.

8652. CHANDLER, MARJORIE E. J. The upper Eocene flora of Hordle, Hampshire. Palaeont. Soc. 1923¹: 1-32. 4 pl. 1925.—This is the first part of a monograph of the fossil plants, mostly fruits and seed, from the lower Headon beds at Hordle, Hampshire. These beds have long been known and much discussed. Of the more than 60 plants known, 36 are carefully described in the initial part. The following are new: *Salvinia hantonensis*, *Pinus* sp., *Potamogeton pygmaeus*, *Cladium minimum*, *Nipa* sp., *Campylospermum hordwellensis*, *Chlorophora bicarinata*, *Broussonetia rugosa*, *Atriplex* sp., *Aldrovana ovatum*, *Brasenia spinosa*, *antiqua* and

oblonga, *Menispermum obliquatum*, *Corydalis pulchrum*, *Liquidambar* sp., *Rubus acutiformis*, *Zanthoxylon* cf. *ailanthoides*, *ornatum* and *compressum*, *Phellodendron costatum*, *Natsiatum eocenicum*, *Iodes* sp., *Rhamnosperrum bilobatum*, *Tetrastigma lobata*, and *Vitis uncinata*. The genus *Spiromatospermum* is proposed for *Gardenia Wetzleri* and it is shown to belong in the family Zingiberaceae. The flora is distinctly southeastern Asiatic and North American in its facies.—*E. W. Berry*.

8653. CHODAT, R. La theorie du divergent et les enchainements des plantes vasculaires. [The theory of the deployment and filiation of vascular plants.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 41: 20-25. 1924.

8654. CLEMENTS, F. E. Evolution of composites and grasses. Carnegie Inst. Washington [D. C.] Year Book 24: 316-317. 1925.

8655. GALENIEKA, P. Angu atliekas Bates sengultnes nogulmos. [Remains of plants in deposits of the old channel of the Bate.] Acta Univ. Latviensis 12: 580-589. Pl. 1. 1925.

8656. GOTHAN, WALTHER. Sobre restos de plantas fosiles procedentes de la Patagonia. (con un apendice: plantas réticas de Maráyes (prov. de S. Juan)) [Remains of fossil plants from Patagonia (with an appendix: Rhaetian plants from Márayes (province of San Juan)).] Bol. Acad. Nac. Cienc. Cordoba [Argentina] 28: 197-212. 10 pl. 1925.—This paper treats of 3 collections of Argentine fossil plants submitted to the author in Berlin, Germany, by the National Academy of Sciences at Cordoba, Argentina: (1) Some silicified pines and woods, collected by Anselmo Windhausen in the Triassic of Cerro Alto, territory of Santa Cruz, include wood of a species of *Dadoxylon* and cones of *Araucaria windhauseni* n.sp.; (2) some plants, collected by Walter Kaufmann, in Tertiary formations of Cerro Mirador, territory of Chubut, are discussed as to their geologic significance; (3) plants from Rhaetian (Mesozoic) formations at Márayes, province of San Juan, which have long been at the Academy, contain *Cladophlebis* n.sp., and *Dicroidium odontopteroides* Morris.—*F. W. Pennell*.

8657. GUYE, C. E. Physico-chemical evolution. Dutton, New York, 1925.

8658. HALLE, T. G. *Tingia*, A new genus of fossil plants from the Permian of China. Bull. Geol. Surv. China, 7: 1-12. 2 pl. 1925.—A restudy of the type and new material representing what Schenk called *Pterophyllum* and *Cordaite*s, shows that it is not a frond but a shoot with a thick axis with 4 rows of leaves. Two species are described, *Tingia carbonica* (Schenk), and *T. crassinervis* n.sp. Their botanical position remains uncertain.—*E. W. Berry*.

8659. HERTLEIN, LEO G., AND C. H. CRICKMAY. A summary of the nomenclature and stratigraphy of the marine tertiary of Oregon and Washington. Proc. Amer. Phil. Soc. 64: 224-282. 1925.—In this mainly geological and paleozoological paper there are a bibliography and lists of fossil plants of the Arago, Olequa, Chehalis, Cowlitz, Swauk and Empire formations.—*E. W. Berry*.

8660. HOFMANN, E. Pflanzenreste der Mondseer Pfahlbauten. [Plant remains of the Mondsee Lake-dwellings.] Sitzungsber. Akad. Wiss. Wien Math.-Nat. Kl. 133¹: 379-409. 1924.—The lake-dwellings of the Mondsee in Upper Austria are of late Neolithic age. Much plant material was found, including *Hordeum hexastichum* var. *sanctum*, *H. polystichum* var. *densum*, *Triticum dicoccum*, a single seed of *Pisum sativum*, 2 forms of apples (*Malus silvestris* and a cultivated form), many hazel nuts, seed of *Taxus baccata*, a single acorn of *Quercus pedunculata*, single fruits of *Fraxinus excelsior*, *Rhamnus frangula*, *Tilia grandifolia*, *Rosa canina*, *Cornus sanguinea*, scales of *Picea excelsa* and *Pinus montana*, good examples of *Polyporus fomentarius* and *Bovista nigrescens*. Remains of bread made of millet is preserved, which from its great porosity is believed to have been made with yeast. Another example of bread is more primitive in character and appears to have been of *Triticum compactum*. Microscopic examination of the old hearth ashes shows many diatoms. Remains of string and weaving of Linden bast were also found. The collection studied contained 121 pieces of wood. Twenty-nine of these were coniferous, including 26 of *Taxus*, 2 of *Abies* and 1 of *Pinus*. The balance were dicotyledonous, including 58 of *Fabus silvatica*, 7 of *Pirus communis*, 8 of *Alnus incana*, 4 of *Malus silvestris*, 8 of *Acer campestre*s, 2 of *Salix caprea*, 1 of *Ulmus campestris*, 3 of *Fraxinus excelsior*, and 1 of *Buxus sempervirens*. A chapter is also devoted to the methods of study of such material.—*H. Cammerloher*.

8661. HUBBARD, GEORGE D. Notes on the geology of Giles County, Virginia. Denison

Univ. Bull., Jour. Sci. Lab. 20: 307-378. 1924.—This mainly geological paper records the alga, *Girvanella*, from the Checkamanga, *Cryptozoon* from the Shenandoah and *Arthropycus harlani* from the Clinch.

8662. HUNTER, R. E., AND WINIFRED E. MOTTRAM. A note on the occurrence of natural preservation of plant tissues. New Phytol. 24: 193-206. Pl. 5-6, 5 fig. 1925.—Well preserved and non-petrified remains of *Statice Limonium*, as well as a few stems of *Obione portulacoides*, and a few seed, probably *Atriplex patula*, are recorded from an outcrop of marsh mud at Blakeney Point, Norfolk, where they have been buried for probably upward of 200 years. Conditions leading to preservation are now found in certain types of pans on the salt marsh.—I. F. Lewis.

8663. JANET, CHARLES. Constitution orthobiontiste des êtres vivants. I. Théorie orthobiontiste. [Orthobiontist constitution of living things. I. Orthobiontist theory.] 84 p. H. Dumontier: Beauvais, 1925.—(See also Bot. Absts. 9, Entry 382; 14, Entries 8963 and 9072.)

8664. KNOPP, ADOLPH. [Rev. of: JEFFREY, E. C. Coal and civilization. 178 p., 44 fig. The Macmillan Co.: New York, 1925.] Amer. Jour. Sci. 9: 436. 1925.

8665. KOCH, FRANZ. Die Cycadeen im Lichte der Wegenerschen Kontinent- und Polwanderungstheorie. [Cycads in the light of the continent and polar movement theory of Wegener.] Mitteil. Deutsch. Dendrol. Ges. 35: 67-74. 2 fig. 1925.

8666. KOWALSKI, J. Paleoxylologie et paleocytologie végétales. Suite de l'étude des bois fossiles provenant des grès tertiaires de St-Tudy (Finistère) [Study of the fossil wood of the Tertiary sandstone of St. Tudy, Finistere.] Bull. Soc. Sci. Nat. Ouest France IV, 2: 85-106. 2 pl. 1922.—In a contribution based on the notes of the late Du Laurens de la Barre, the author describes *Piceoxylon pseudotsugoides* n.sp., comparing it with *Piceoxylon gothani* Fritel & Viguier from the Eocene Auteuil sands, and with *Pityoxylon pseudotsugae* Gothan, of probable Tertiary age, from Nevada.—A. de Puymaly.

8667. KRANICHFELD, HERMANN. Die Geltung der von W. Roux und seiner Schule für die ontogenetische Entwicklung nachgewiesenen Gesetzmässigkeiten auf dem Gebiete der phylogenetischen Entwicklung. Ein Beitrag zur Theorie der Stammesentwicklung (Theorie des phylogenetischen Wachstum). [The value of the laws demonstrated by W. Roux and his school for ontogenetic development, in the realm of phylogenetic evolution.] 96 p. Julius Junger: Berlin, 1922.

8668. KRÄUSEL, R. Ueber einen fossilen Baumstamm von Bolang (Java), ein Beitrag zur Kenntnis der fossilen Flora Niederländisch-Indiens. [A fossil tree trunk from Bolang, Java. A contribution to the fossil flora of the Dutch Indies.] (Verslag.) K. Akad. Wetenschap. Amsterdam Serie A, 31²: 15-21. 1 pl., 2 fig. 1922.—The new species, *Dipterocarpoxyylon javanense*, from the supposed Tertiary of Java is described.—E. W. Berry.

8669. KURTZ, F. Atlas de plantas fosiles de la Republica Argentina. [Atlas of fossil plants of the Argentine Republic.] Actas Acad. Nac. Cienc. Cordoba [Argentina] 7: 129-153. 27 pl. 1921.—This posthumous work has been completed by C. C. Hosseus, although embodying only determinations made by F. Kurtz. After a brief outline in Spanish of the projected work and a summary of the collections seen from Argentina the Latin text considers one of the Thallophyta, *Xylomites zamitae* Goepp. (Fungus); and the following Pteridophyta: *Acrocarpus jocoliensis* n.sp., *Adiantides antiquus* (Ett.) Stur., *Archaeopirris argentinae* n.sp., *Asplenites macrocarpus* (Oldh. & Morr.) Feistm., *Asterothea fuchsii* (Schimp.) Solms-Laubach, *Bergiopteris insignis*, n. gen. & n.sp., *Botrychiopsis weissiana* Kurtz, *Cardiopteris elegans* n.sp., *C. polymorpha* (Goepp.) Schimp., *Danaeopsis cacheutensis* n.sp., *Neuropteridium validum* Feistm., *Odopteris argentinica* Geinitz and var. *ovata* (McCoy) Kurtz n. comb. *Rhacopteris inaequilatera* (Goepp.) Feistm., *R. szajnochai* n.sp., *Sphenopteridium proto-loxsoma* n.sp., *S. truncatum* n.sp., *Sphenopteris bodenbenderi* n.sp., *S. elongata argentina* n. var., *S. fonsecae* n.sp., *S. maesseni* n.sp., and *S. sanjuarina* n.sp. Each genus and species is described, and the synonymy and general distribution of each species indicated with citation of Argentine specimens. Copious illustrations are given of each species.—F. W. Pennell.

8670. LINDERBEIN, H. A. R. La kuckersite. Étude d'un dépôt marin phytogène du Silurien inférieur de la Baltique. Genèse et caractère chimique. [Kuckersite, a marine deposit of plant origin in the lower Silurian of the Baltic, its origin and chemical character.] Compt. Rend. Soc. Phys. d'Hist. Nat. Genève 38: 71-74. 1921.

8671. LINDERBEIN, H. A. R. Une flore marine sapropelitique de l'Ordovicien de la Baltique. [A marine sapropelitic flora of the Ordovician of the Baltic.] Compt. Rend. Soc. Phys. d'Hist. Nat. Genève 38: 60-63. 1921.

8672. McDOWALL, STEWART A. Evolution, knowledge and revelation: being the Huxleyan Lectures delivered before the Univ. of Cambridge, 1923-24. xviii + 118 p. University Press: Cambridge, 1924.

8673. MAURY, CARLOTA JOAQUINA. Fosséis Terciários do Brasil com descrição de novas formas Cretáceas. [Tertiary Fossils of Brazil with descriptions of new Cretaceous forms.] Serv. Geol. e Min. do Brasil, Mon. 4: 665. Pl. 24. 1925.—In this work devoted to paleozoology the following fossil plants, all new, are described from Baixa Verde in the State of Rio Grande do Norte, and are said to be associated with Upper Cretaceous marine fossils: *Coccolobites? riograndensis*, *Sideroxylon? baixaverdensis*, *Leguminosites? vireti*, and *Platypodium? sp.*—E. W. Berry.

8674. MAWSON, D. Evidence and indications of algal contributions in the Cambrian and Pre-Cambrian limestones of South Australia. Trans. and Proc. Roy. Soc. South Australia 49: 186-190. 3 pl. 1925.—Photographs are given of sections of an almost pure Cryptozoon limestone in the Flinders Ranges, and also of banded limestones south of Adelaide in which occasional clearly marked forms of *Archeocyathus* were recognisable. In another Flinders Range limestone markings closely resembling *Halimeda* were noted.—Geoffrey Samuel.

8675. PIA, J. Ueber einen merkwürdigen Landpflanzenrest aus den Notscher Schichten (Carbon der Gegend von Bleiberg in den Östlichen Gailtaler Alpen). [A rare land plant fossil in Notsch strata (Carboniferous from the district of Bleiberg in the Eastern Gailtaler Alps).] Sitzungsber Akad. Wiss. Wien 133: 543-558. 1924.

8676. RETTERER, EDOUARD. Elements d'histologie: structure et evolution de matière vivante. [Elements of Histology: structure and evolution of living matter.] 219 p. Payot: Paris, 1924.

8677. RUBCZYŃSKA, M., ET J. ZABLOCKI. Ueber zwei fossile Koniferenhölzer von Pośadz. [Two fossil coniferous woods from Pośadz]. Bull. Acad. Sci. Cracovie 5-6 B: 433-436. 1 pl., 2 fig. 1924 [1925].—Both pieces of the fossil wood originate from the Upper Miocene bed of sulphur clay, near Pośadz, to the north east from Cracow. They are determined as *Piceoxylon laricinum* Kräusel and *Podocarpoxylon sp.*—Hanna Czecczot.

8678. SCOTT, D. H. Studies in fossil botany. Vol. 2: 3rd Ed. XVI + 446 p. 133 fig. A and C Black, Ltd.; London, 1923.—This volume is concerned with the fossil Spermatophyta of Paleozoic and Mesozoic age. The account of the "Seed-Ferns" (Pteridosperms) in Chapters I-III has been completely re-arranged and for the most part, rewritten. Chap. I is on the Lyginopterideae, beginning with *Heterangium*, which, on the ground of its relatively simple anatomy, is now taken before the type-genus *Lyginopteris*. Chapter II, which is practically new, covers a number of families referred provisionally to the Pteridosperms. In Chap. III the Medulloseae and other families, in which the seed and to some extent the male organs are known, are described, and various outlying groups are also considered. The old view, that the Pteridosperms were derived from the Ferns, is no longer regarded as tenable. Chap. IV deals with the more advanced Paleozoic Gymnosperms, grouped under Cordaitales. Chap. V is devoted to the Mesozoic Gymnosperms; the important extinct class Bennettitales is treated at length. The final chapter is on the general results of the whole survey, covering both volumes. The discovery of the early Devonian plants, the Psilophytales, described in the 1st volume, has profoundly affected the whole aspect of plant-evolution. The discussion therefore starts from this ancient race. As regards the Spermatophyta the evidence indicates that they have been an independent phylum from very early times, and were not derived from any of the higher Cryptogams as at present known. The existence of a real relation between the Angiosperms and the highly organised Mesozoic Cycadophyta is upheld as tenable. With reference to all phylogenetic questions a more tentative tone now seems advisable.—Author.

8679. SETLIK, J.: Různostvárnost lístků u druhu *Neuropteris plicata* Sternb. [The variability of pinnule form in *Neuropteris plicate* Sternb.] Sborn. Klubu Přírodov. v Praze 1923: 79-83. 1 fig. 1923.—The species *Neuropteris acutifolia* (not Brogniart), *N. plicata*, and *N. oborata* Sternb. do not differ specifically and represent a single species.—From Preslia (transl.).

8680. STACH, ERICH. Zur Petrographie und Entstehung der Peiszenberger Pechkohle. [The Petrography and origin of the Peiszenberg Pitchcoal.] Zeitschr. Deutsch. Geol. Ges. Monatscher 77: 260-288. 5 pl. 1925.

8681. SZAFER, W. Ueber den Charakter der Flora und des Klimas der letzten Interglazialzeit bei Grodno in Polen. [Character of the Flora and climate of the last Interglacial Period near Grodno in Poland.] Bull. Acad. Sci. Cracovie 3/4 B: 277-314. 6 fig. 1925.—The plant remains from 3 localities in the Niemen Valley near Grodno are described. Their study as well as the study of the stratigraphic relations of the layers containing them results in the recognition of several climatic phases in the last Interglacial period, which are successively: (1) Subarctic, (2) Boreal, (3) first Subatlantic, (4) Hiatus, (5) Meridional-Pontic, (6) second Subatlantic, (7) Pre-subarctic. The striking analogy of this series with the Postglacial climate and vegetation changes is pointed out. The comparison with the interglacial floras of Klinge and Ingramsdorf, in Germany and Smolensk and Lichvin, in Russia shows that the climate and vegetation changes in these countries have been similar but not identical; according to it three regional climatic facies are to be recognized in the last Interglacial period, namely, the North-German, the Silesian-Polish and the Middle-Russian.—Hanna Czechtot.

8682. TEILHARD DE CHARDIN, P., ET P. H. FRITEL. Note sur quelques grès mésozoïques à plantes de la Chine septentrionale. [Note on fossil plants from Mesozoic sandstone of northern China.] Bull. Soc. Geol. France. 25: 523-540. 2 pl. 1925.—The authors record the following from beds in northern China considered to be of lower Oolitic age: *Asplenium whitbyense* (Brongn.) Schimp., *A. whitbyense* var. *tenue* Heer, *A. phillipsi* (Brongn.) Schimp., *Coniopteris hymenophylloides* Brongn., *Pterophyllum falconerianum* Morris, *P. nilssoni* (Phillips) Seward, *Anomozamites morrisianus* (Oldham) Schimp., *Zamia* sp., *Shizoneura lateralis* Schimp., *Czekanowskia* sp., *Ginkgoites* sp., and *Carpolithus* sp.—E. W. Berry.

8683. VERHULST, A. Essai de phytostatique en Jurassique belge. I^b. Étude spécial du Toarcien. [Phytostatic study of the Belgian Jurassic. I^b. Study of the Toarcian stage.] Bull. Soc. Roy. Bot. Belgique (2^e Série) 56: 33-41. 1924.

8684. VERHULST, A. Essai de phytostatique en Jurassique belge. III. Étude spéciale du Virtonien et du Sinémurien. IV. Les plantes hygrophiles. V. Étude spéciale de l'Hettangien. Étude spéciale du Rhétien. [Phytostatic study of the Belgian Jurassic. III. Special study of the Virtonian and Sinemurian stages. IV. Hydrophilous plants. V. Special study of the Hettangian stage, special study of the Rhetian.] Bull. Soc. Roy. Bot. Belgique (2^e Série) 56: 99-123. 1924.

8685. WALTON, J. Carboniferous Bryophyta. I. Hepaticae. Ann. Bot. 39: 563-572. 1 pl., 1 fig. 1925.—The author reviews our scanty knowledge of fossil bryophytes and suggests that the form-name, *Thallites*, be used for thalloid organisms of doubtful affinity. He then describes and figures, from rocks of the Upper Carboniferous, 4 new species which he assigns to the new form-genus *Hepaticites*. These species are as follows: *H. Kidstoni*, *H. Langi*, and *H. lobatus*, from the Middle Coal-Measures; and *H. Willsi*, from the Upper Coal-Measures. He regards these fossils as undoubted Hepaticae and suggests an affinity with the anacrogynous Jungermanniaceae.—A. W. Evans.

8686. WIELAND, G. R. Triaso-Jurassic plant evolution and climate. Amer. Nat. 59: 452-474. 1925.

PATHOLOGY

FREEMAN WEISS, *Editor*

(See also in this issue Entries 5782, 5807, 5823, 5855, 5857, 5858, 5868, 5879, 5909, 5911, 5912, 5918, 5919, 5937, 5943, 5966, 5974, 5984, 5988, 5995, 6009, 6018, 6072, 6118, 6342, 6367, 6408, 6413, 6415, 6475, 6641, 6642, 6744, 6822, 6841, 6875, 7020, 7115, 7187, 7191, 7328, 7351, 7426, 7443, 7466, 7497, 7498, 7514, 7571, 7582, 7598, 7601, 7674, 7709, 7832, 7900, 7926, 7952, 8033, 8062, 8096, 8139, 8167, 8208, 8217, 8218, 8230, 8401, 8492, 8503, 8506, 8509, 8518, 8524, 8529, 8545, 8546, 8562, 8570, 8573, 8597, 8621, 8994, 9154, 9204, 9263, 9284, 9297, 9456, 9486, 9503, 9504, 9515, 9531)

DISEASES CAUSED BY FUNGI

8687. ANONYMOUS. Cane wilt attacking blackberry. *New Zealand Jour. Agric.* 31: 301-302. 1925.

8688. ANONYMOUS. Citrus brown rot. *Jour. Dept. Agric. Western Australia* (2nd ser.) 2: 443. 1925.—Attention is called to the discovery that a fungus, thought to be American, which has infested orchards in Western Australia since 1917, was shown by W. M. Carne to be a new species.—*B. J. Olson.*

8689. ANONYMOUS. La pourriture rouge de l'épicéa en Belgique. [The red rot of fir in Belgium.] *Bull. Soc. Centrale Forest. Belgique* 31: 653-657. 1924.—This is a summary of reports of forest agents concerning damage to fir by *Fomes annosus* Fr. The area of each infestation is given by cantons, also the age of the stand, the percentage of total volume attacked, and the maximum height of attack. Mixed stands, with broadleaved species in groups or in bands, is the principal remedy suggested.—*H. T. Gisborne.*

8690. ANONYMOUS. Mildews which attack plants of the gourd family. *Plant Protection Sect., Min. Agric. Egypt, Mycol. Div. Leaf.* 8. 1-3. 4 pl. 1924.—*Peronoplasmopara cubensis* and *Erysiphe chioracearum* are described, life histories are given and methods of control are suggested.—*T. Fahmy.*

8691. ANONYMOUS. The downy mildew of vines caused by *Plasmopara viticola* (B. and C.) Berl. and De Toni. *Plant Protection Sect., Min. Agric. Egypt Mycol. Div. Leaf.* 1. 1-3. 3 pl. 1923.—The nature of the disease, financial loss it causes and the life history of the parasite are discussed. Bordeaux and lime sulphur are recommended for control.—*T. Fahmy.*

8692. ANONYMOUS. The smuts of barley. *Plant. Protect. Sect., Min. Agric. Egypt. Mycol. Div. Leaf.* 7. 1-3. 3 pl. 1944.—Covered smut (*Ustilago hordei*) and loose smut (*Ustilago nuda*) are described, the life histories of the parasites are given and methods of control are suggested.—*T. Fahmy.*

8693. ADAM, D. B. The blue mould (*Peronospora*) disease of tobacco. *Jour. Dept. Agric. Victoria* 23: 436-440. 1925.—Threatens to become the limiting factor for tobacco production in Victoria. It attacks *Nicotiana tabacum* and *N. suaveolens* but has not as yet been discovered on *N. glauca*. As conidiospores may be produced at intervals throughout mild winters, destruction of old tobacco stalks and planting of seed free from chaff is essential. As yet, no resistant varieties have been found.—*Wm. E. Lawrence.*

8694. ALCOCK, N. L. A note on raspberry canker (*Nectria Rubi*, Osterwalder). *Trans. and Proc. Bot. Soc. Edinburgh* 192: 197-198. 1925.

8695. ANDERSON, P. J. Comparative susceptibility of onion varieties and of species of *Allium* to *Urocystis cepulae*. *Jour. Agric. Res.* 31: 275-286. 1925.

8696. ANDERSON, P. J. Development and pathogenesis of the onion smut fungus. *Massachusetts Agric. Exp. Sta. Tech. Bull.* 4. 99-133. 6 fig. 1921.—An account is given of certain phases of the life cycle of *Urocystis cepulae*.—*S. A. Wingard.*

8697. ARMSTEAD, DOROTHY, AND SYDNEY CROSS HARLAND. The occurrence of mildew in black-bordered dhooties. *Jour. Text. Inst.* 14: T475-T481. 2 pl. 1923.

8698. [BACHTIN, V.] Бахтин, В. К методике учета спорыньи. [Methods for estimation of the damage caused by ergot.] (French summary.) *Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р.* [Plant Diseases, Jour. Div., Phytopath. Main Bot. Gard. R. S. S. R.] 1925: 11-17. 1925.—It is stated that the formula given by N. A. Naumov for an

estimation of the damage caused by ergot is to be $A = F \frac{x}{m} \frac{n}{N}$, where A is the degree of infection

in the district, x is number of diseased heads, m is total number of heads, n is total number of infected plants, N is total number of plants, and F is average intensity of infection of head determined by counts of infected and healthy spikelets. The formula is considered to be not quite sufficiently practical and simple for its wide application. The author's determination on certain plots of rye affected with ergot showed that the percentage of grain contamination with ergot is $R = P/K_1 = Q/K_2$, where P = frequency of infection of plants = $100n/N$ (in %); Q = frequency of head infection = $100X/m$ (in %); and K_1 and K_2 are constants the values of which in the experiments were 43 and 15.6 correspondingly.—*C. D. Sherbakoff*.

8699. BAUDYS, E. O spále či anthraknose jetele. [Blight or anthracnose of clover.] *Ochrana Rost.* 1: 1-4. 1924.

8700. BAXTER, DOW VAWTER. The biology and pathology of some of the hardwood heart-rotting fungi. Pts. I-II. *Amer. Jour. Botany* 12: 522-552 and 553-576. 4 pl. 1925.—Field studies, microscopic observations, mechanical tests, chemical tests and culture studies were made of the decay of various woods by several heart-rotting fungi, especially *Polyporus hispidus*, *Fomes fraxinophilus*, *F. fraxinophilus* f. *ellisianus*, *F. applanatus*, *F. connatus*, *F. everhartii*, *F. igniarius* and *F. pomaceus* f. *crataegi*. Several species were grown in pure cultures on wood blocks in flasks by an improved method. Results indicate that visible changes cannot be used as criteria of fungous penetration. The peripheral black line or discolored zone in decaying heartwood does not mark the limit of the mycelium and must be otherwise explained. Distribution of the mycelium does not follow any general rule. It may be in pockets or uniformly distributed. Each species cultured on agar produced a distinctive vegetative growth. The rate of decay caused by a given fungus varies with each species of wood and is due to the "decay resistance" of the wood. The type of rot also seems to vary with different woods. Evidence is presented that *Fomes ellisianus* and *F. fraxinophilus* are a single species, and the former is treated as a form of the latter.—*E. W. Sinnott*.

8701. BAXTER, DOW V., AND G. H. COONS. White pine blister rust in Michigan. *Michigan Agric. Exp. Sta. Quart. Bull.* 5. 193-196. 1 fig. 1923.—This disease was found at several localities in Michigan in 1922, in connection with plantings of imported white pine, and both on pines and on currants or goose-berries. Recommendations were given for control.—*Ernst A. Bessey*.

8702. BLAKE, ERNST G. Enemies of timber: dry rot and the death-watch beetle. xv + 206 p. 22 fig. Chapman and Hall: London, 1925.—In Part I the author discusses in a popular way the structure of wood, the propagation and development of dry-rot (with particular emphasis on *Merulius lacrymans*) and the method of prevention of dry-rot in new and old buildings. Full directions are given for waterproofing walls and floors, for providing ventilation, for eradication of infected timbers and for applying disinfectants and preservatives.—In Part II the life histories of the common furniture beetle, *Anobium punctatum*, and of the death-watch beetle, *Xestobium tessellatum*, are outlined; and in connection with each the nature of the damage caused and the methods of control are discussed.—*Reginald H. Colley*.

8703. [BONDARTZEV, A.] Бондарцев, А. О распространении домовых грибов в Ленинграде. [Spread of house wood-rotting fungi in Leningrad.] *Болезни Растений, Вест. Отд. Фитоп. Гл Бот. Сада, Р. С. Ф. С. Р.* [Jour. Div. Phytopath. Main Bot. Gard. R. S. S. R.] 1925: 41-42. 1925.—It is reported that due to the neglect of the houses in Leningrad during recent years the development wood-rot fungi became extremely severe and that with the beginning of the period of rebuilding the Division of Phytopathology took an active part in combating the rot. The data accumulated show that the damage was due primarily to 2 fungi, *Merulius lacrymans* being responsible for 50% and *Poria vaporaria* for 30%. Several other fungi are mentioned, among which *Conidiophora cerebella* is considered most important. The remaining 5% of the rot could not be definitely associated with any of the fungi. Often 2 or even 3 of the fungi were present on the same specimen.—*C. D. Sherbakoff*.

8704. [BUCHHEIM, A. N.] Бухгейм, А. Н. Кбиологии *Uromyces Primulae* Pers. [Biology of *Uromyces primulae* Fuck.] (French summary.) *Труды Московского Отд., Секции по Микол. и Фитоп. Русс. Бот. О-ва* [Proc Moscow Div., Section Mycol. and Phytopath. Russian

Bot. Soc.] 1: 37-38. 1923.—From his inoculation experiments the author concludes that *U. Primulae* is composed of 2 species—one parasitic on *Primula hirsuta* and the other on *P. auricula*. The results of inoculations of certain *Primula* hybrids are also given, indicating that one hybrid of these 2 species, similar to *P. auricula*, is subject to infection with aeciospores from *P. auricula*, while another hybrid, similar to *P. hirsuta*, is infected only with aeciospores from *P. hirsuta*.—C. D. Sherbakoff.

8705. [BURGWITZ, G. K.] Бургвиц, Г. К. *Sphaerotheca macularis* (Wallr.) P. Magnus на *Dipsacus fullonum* (L. exp.) Mill. [*Sphaerotheca macularis* (Wallr.) P. Magnus on *Dipsacus fullonum* (L. exp.) Mill.] Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Gard. R. S. S. R.] 1925: 103-105. 1925.—A brief report of the finding of *P. magnus* on *D. fullorum* in Crimea, with a description of the fungus.—C. D. Sherbakoff.

8706. CASTELLA, F. DE. Vine black spot and erinose. Jour. Dept. Agric. Victoria 23: 432-435. 1925.—A dry spring will sometimes prevent anthracnose or vine black spot (*Man-ginia ampelina*) but a winter swab with acid iron sulphate, and spring and summer sprays with copper fungicides, such as Bordeaux, etc., are recommended.—Wm. E. Lawrence.

8707. CHEVALIER, A. Sur une maladie de la lavande cultivée. [A root rot of *Lavandula fragrans* and *L. delphinensis* in cultures.] Rev. Bot. Appl. et Agric. Coloniale 2: 482-483. 1922.—*Pholiota praecox* is reported on roots of wilted *Lavandula* grown for essential oil in south-eastern France.—J. Dufrenoy.

8708. CHRISTENSEN, J. J. Physiologic specialization and mutation in *Helminthosporium sativum*. Phytopathology 15: 785-795. 4 fig. 1925.—Cultures of *H. sativum* obtained from England, Australia, Africa, Argentina, Serbia, Canada, and many localities in the U. S. A. were compared as to behavior on culture media and as to parasitism. Single spore isolations being used. Thirty-seven distinct forms were studied in detail while several other apparently distinct physiologic forms were noted. All forms can attack the roots and stem-bases of wheat and barley but they vary greatly in virulence, some produce mutations frequently, others not at all. These mutants breed true when propagated either by spores or mycelium. Some are more, others less, virulent than the parent form. *H. sativum* is an extremely variable species. Results obtained in one place may not be applicable in other localities or with other physiologic forms.—B. B. Higgins.

8709. CLAYTON, E. E. Investigations of cauliflower diseases on Long Island. New York [Geneva] Agric. Exp. Sta. Bull. 506. 1-15. 8 pl. 1924.—The diseases treated are blackrot (*Pseudomonas campestris*), blackleg (*Phoma lingam*), clubroot (*Plasmodiophora brassicae*), peppery leaf-spot (*Pseudomonas maculicolum*), alternaria leaf-spot (*Alternaria brassicae*), and whiptail (non-parasitic). Prominence is given to methods of control. Seed treatment gave control of blackrot and blackleg, hot water proving more effective than corrosive sublimate but more likely to lower germination. Treatment of plants in the seedbed with corrosive sublimate gave good control of blackrot and blackleg and was also effective against clubroot. Liming the soil effectively controlled whiptail.—F. C. Stewart.

8710. COLLA, S. Contributo alla conoscenza dei Laboulbeniali piemontesi. [Contribution to knowledge of Laboulbenia.] Atti R. Acad. Sci. Torino 60: 250. 1924-1925.—The author describes about 30 species of *Laboulbenia* collected in the piedmont regions and notes that these and probably all those of upper Italy show characters intermediate between the Laboulbenias of France, Italy and Switzerland. According to the author the alpine varieties present a sensible accentuation of the characters of the species of the plains.—Felice Gioelli (translated by J. M. Fogg, Jr.).

8711. COONS, G. H. Celery blight or leaf-spot. Michigan Agric. Exp. Sta. Quart. Bull. 5. 190-193. 2 fig. 1923.—This is a popular discussion of celery leaf blight (*Septoria apii*). The recommendations include: the use of seed 2 years old, or disinfection with HgCl₂ or formaldehyde, spraying the seed bed with bordeaux mixture every 7-10 days, and in the field every 10-14 days.—Ernst A. Bessey.

8712. CURZI, M. Intorno alla causa dell'avvizimento del peperone (*Capsicum annuum* L.). [The cause of wilting in peppers.] Nouvo Gior. Bot. Italiano n.s. 32: 380-395. 1925.—Wilting of peppers results in losses amounting to 25-40% of the plants in several districts of

Italy. The symptoms consist in withering of the leaves, enlargement of the nodes with discolorations in the vascular system, and in advanced cases, decaying of the secondary roots and wilting of the plants. Some of the tracheae are found to contain mycelium extending from the roots to a few cm. below the apex of the plant. This is referred to *Verticillium tracheiphilum* which is described in detail. Different species of *Fusarium* obtained from plants in advanced stages of the disease have no relation to the mycelium found in the tracheae.—*P. D. Caldis.*

8713. DICKSON, B. T. Oat smut control in 1924. Report of Quebec Society for Protection of Plants. 17: 35-36. 1925.—Treatment of Liberty oats for smut showed that dust treatments were the best as far as smut control was concerned. Nickel sulphide, nickel carbonate and nickel hydrate dusts proved to be the most effective fungicides used in the tests.—*J. E. Machacek.*

8714. DORAN, W. Snapdragon rust and its control. Florists' Exchange 58: 483-484. 1924.—Dusting with sulphur is advocated. It is important that the temperature of the house be maintained up to at least 72°F. for 12 hours of each day for 3 days, following application of the dust.—*F. F. Weinard.*

8715. DRECHSLER, CHAS. Leafspot of maize caused by *Ophiobolus heterostrophus*, n. sp., the ascigerous stage of a *Helminthosporium* exhibiting bipolar germination. Jour. Agric. Res. 31: 701-726. 2 pl., 1 fig. 1925.

8716. DRECHSLER, CHARLES. The cottony leak of cucumbers caused by *Pythium aphanidermatum*. Jour. Agric. Res. 30: 1035-1042. 2 pl., 1 fig. 1925.

8717. DUFRÉNOY, J. Action des radiations ultra-violettes sur les zoospores de *Blepharospira Cambivora* Petri et de *Phytophthora omnivora* parasitica. [Action of ultra-violet light on zoospores of *Blepharospira* and *Phytophthora*.] Rev. Path. Vég. et Entomol. Agric. 12: 270-271. 4 fig. [1925] 1926.—Irradiation is withstood for several minutes if the zoospores are immersed in a drop of water, but causes cytolysis in 2-3 minutes if the water layer is thin. Even when motion is not at once arrested, the irradiated spores are stimulated to much earlier quiescence and loss of cilia.—*F. Weiss.*

8718. DUFRÉNOY, J. La maladie du châtaignier dans l'Aveyron et le Cantal. [The chestnut disease in Aveyron and Cantal.] Bull. Office Agric. Rég. Massif Central, Clermont-Ferrand 1924: 55-65. 1924.—This is an inquiry into the geographical distribution, and a characterization, of the inky disease. It appears on mature trees either in chronic form, in which case the tree may be benefited by the application of directly assimilated fertilizers, or in a destructive form designated as "apoplexy." Young plants also are attacked.—Certain prophylactic measures are given against the inky disease, chestnut wilt, and different wound parasites, but the French chestnut-groves must be regenerated through exotic resistant varieties, particularly Japanese, the indigenous chestnuts scarcely thriving, except in the uplands.—*A. Dusseau (transl.).*

8719. DUFRÉNOY, JEAN. Les méthodes de lutte contre la maladie du châtaignier. [Control of inky disease of chestnuts.] 27 pl. Col. pl., map. G. Mont.-Louis: Clermont-Ferrand, 1925.

8720. ESPINOSA BUSTOS, MARCIAL R. Una enfermedad grave del trigo chileno producida por un hongo parásito venenoso. [A serious fungous disease of Chilean wheat.] Rev. Chil. Hist. Natur. 24: 79-86. 1 pl., 1 fig. 1920.—The fungus, *Claviceps purpurea*, is carefully described, and the first notice of its occurrence in Chile, 1920, is recorded.—*F. W. Pennell.*

8721. FAES, H., ET M. STAHELIN. Nouvelle contribution à l'étude du coître de la vigne (*Coniothyrium diplodiella*) ou maladie de la grêle. [Infection of the vine by *C. diplodiella*, or hail disease.] Prog. Agric. et Vitic. 81: 281-287. 1924.—Observations on a disease in which infection occurs through hail wounds. It is important in certain cantons of Switzerland.—*E. L. Proebsting.*

8722. FISCHER, ED. Einiges über den Pflaumenrost. [Rust of plums.] Schweizerische Obst- und Gartenbau-Zeitg. 27-38²²: 355-357. 1925.

8723. FOËX, E. T. La maladie verruqueuse de la pomme de terre. [The wart disease of potato.] Jour. Soc. Nat. Hort. France IV, 26: 309-369. 1925.

8724. FUKUSHI, TEIKICHI. Studies on the apple rust caused by *Gymnosporangium Yama-*

dae Miyabe. Jour. Coll. Agric. Hokkaido. Imp. Univ. 15: 269-307. 4 pl. 1925.—This rust causes an important disease of the cultivated apples in Japan and infects several native species of *Malus*. Its sporophytic hosts are *Juniperus chinensis* and *J. sargentii*.—Germinating masses of teliospores were smeared upon leaves of 50 varieties of apples. The results show McIntosh Red and Fameuse to be especially resistant. All other varieties tested proved susceptible. The first evidence of infection on *Juniperus* occurs in late summer as small green galls at the base of the leaves. In the following May the cushion-shaped tilia appear through the ruptured bark. Germination follows during favorable moisture conditions and basidiospore infection on apple leaves results in hyperplasia of the spongy parenchyma. The chloroplasts degenerate and the cells of the infected area become filled with starch grains. The mycelial development in apple leaves of the more resistant varieties is much more restricted than in susceptible varieties.—In *Juniperus chinensis* the sporophytic mycelium stimulates an abundance of parenchyma formed from medullary ray- and bast-cells. The vascular elements in the gall are derived from the stem, being chiefly composed of spiral and scalariform tracheids surrounded by elongated parenchyma and sieve tubes. A thick layer of cork cells surrounds the gall. The mycelium invades all portions of the gall except the cork and even penetrates to the central cylinder of the stem at the base of the gall.—The aeciospores of *G. yamadæ* do not readily germinate during the season they are produced. Neither leaf juice of *Juniperus* nor sugar solutions exert any direct stimulating action upon their germination, but exposure to winter conditions or to cooling at 0°-5°C. for 20 days produced better germination in most cases. The aeciospores retained their germinability for as long periods as 177-212 days when accia-bearing leaves were kept out-of-doors in cotton bags.—The optimum temperature for basidiospore germination ranges from 16° to 22°C. with the minimum at 7°C. and the maximum at 30°C. No sporidia are formed at temperatures above 24°C. A bibliography of 43 titles is appended.—C. R. Orton.

8725. GAINES, E. F. Resistance to covered smut in varieties and hybrids of oats. Jour. Amer. Soc. Agron. 17: 775-789. 1925.—Of 210 varieties and selections of oats tested for resistance to covered smut (*Ustilago levis*) during the past 8 years 21 were smut-free, the others ranging from slight infection to extreme susceptibility in which 90% of the panicles were destroyed.—F. M. Schertz.

8726. GLYNNE, MARY D. Infection experiments with wart disease of potatoes, *Synchytrium endobioticum* (Schilb.) Perc. Ann. Appl. Biol. 12: 34-60. 1925.—Experiments showed that infection took place only when the soil was very wet and that if the soil was kept only moist or very dry, infection failed to occur even though the soil was heavily infested. When sufficient soil moisture was provided, it was found possible to test various potato varieties in pot cultures and to separate out the resistant from the susceptible, thus greatly simplifying the study of soil sterilization and the breeding of resistant varieties. When such work is done in the field it requires 2 or more years since dry seasons are likely to prevent infection. Under wet conditions no difference could be detected between different kinds of soil with regard to the infection of susceptible varieties. If the moisture is applied for only a limited period it was found that the 2nd month of growth was apparently the most favorable time for infection. A 2nd method of testing is described in which fresh material containing summer sporangia was applied to shoots on tubers kept in the laboratory and infection obtained within 3 weeks. Slight warts were produced on 3 varieties of tomatoes, *Solanum nigrum* and *S. dulcamara*, but 5 other varieties of tomatoes appeared to be immune, as did the common weeds and a variety of other plants.—A. F. Camp.

8727. GOMEZ, E. T. Leaf blight of gabi (*Colocasia antiquorum*) in the Philippines are described. The fungus is identified as *Phytophthora colocasiae*. The conidia germinate either by the production of zoospores or by germ tubes. Chlamydospores, oospores, antheridia, and secondary conidia were found. The fungus was grown on 18 different culture media. Cultures on Ashley's lima bean agar produced oospores. Infection takes place on either the upper or lower surface of the leaves, by penetration through the epidermis, through stomata, or through injuries.—E. B. Matzke.

8728. GRATZ, L. O. Irish potato disease investigations, 1924-1925. (A preliminary report.) Florida Agric. Exp. Sta. Bull. 176. 1-24. Fig. 1-6. 1925.

8729. GRAVATT, G. F. The present status of the chestnut [*Castanea americana*] blight. Jour. Forest. 22: 193-196. 1 map. 1924.

8730. HAENSELER, C. M. Pea root rot studies. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 403-414. 1 pl. 1924 [1925].—Isolations from diseased roots and stems in most cases yielded *Fusarium* spp., though *Ascochyta pisi*, *Rhizoctonia solani* and species of *Phoma* and *Pythium* were frequently obtained. Microscopic studies revealed oospores of a fungus apparently identical with *Aphanomyces euteiches* in almost all typical root rot specimens. This organism is believed to be the cause of the most serious type of root rot in New Jersey.—Fourteen isolations, including 11 strains of *Fusarium*, 2 of *Pythium* and 1 of a sterile mycelium were tested for pathogenicity on peas in the greenhouse. Of these, 1 strain of *Fusarium*, *Pythium*, and the sterile mycelium proved to be pathogenic.—Field observations indicated that in the case of *Aphanomyces*, fields with 100% infected plants, but with a constant high moisture content, may yield a heavy crop, while a drought after infection may cause an entire crop failure. Controlled moisture studies showed little effect of moisture on *Fusarium* infection, but the rot of seed and seedlings by *Pythium* increased with moisture content. In one test all seed were rotted before germination in soils held at 60 and 80%, while germination was normal at 20%, of saturation.—Susceptibility to infection by the sterile mycelium increased with the age of the inoculated plants. Successive cropping to peas under greenhouse conditions greatly increased the amount of *Fusarium* and *Pythium* rot. Fertilizer treatments tested showed no appreciable effect on the development of root-rot.—Planting at depths from $\frac{1}{2}$ to 6 inches had no effect on the amount of root rot. Of 40 varieties tested in root-rot-infested soils, none were found to be resistant, but Sutton's Ideal and World's Record gave satisfactory yields. Tests of numerous root-rot-resistant strains obtained from Wisconsin, Maryland and the U. S. Dept. Agric., showed that all strains were susceptible, or that those which were somewhat resistant were not suited to New Jersey conditions. New Jersey selections gave some promise of resistance.—Wm. H. Martin.

8731. HARRISON, J. E. Elmore crop and fallow competition, 1924. Jour. Dept. Agric. Victoria 23: 79-84. 4 fig. 1925.—Control of take-all (*Ophiobolus cariceti*) and the bunts (*Tilletia levis* and *Tilletia tritici*) is described.—Wm. E. Lawrence.

8732. HARRISON, K. A. A preliminary report on a disease of beans. Rept. Quebec Soc. Protect. Plants 17: 62-68. 1 pl. 1925.—An organism causing a disease resembling anthracnose of beans was found to be probably *Phyllosticta phaseolina* Sacc. Previous report of the disease in Canada was made by Dearness. Disease symptoms and morphology of the organism are given.—J. E. Machacek.

8733. HARRISON, K. A. Physiological specialization in *Colletotrichum lindemuthianum* in Eastern Canada. Rept. Quebec Soc. Protect. Plants 17: 45-62. 2 pl., 1 fig. 1925.—Fifteen strains were used to inoculate the 7 varieties that Leach has used as differential hosts. Culture 36 (probably from Florida) is considered as a separate strain and identical with Leach's IV and by comparing its reactions with those of Barrus' cultures it is considered as belonging to his "alpha" strain. All of the other cultures isolated during the course of the work are considered as coming under his "beta" strain. The only variety found resistant to all the cultures used was Well's Red Kidney. The varieties that proved resistant to the cultures from Canadian sources were Navy, Minn. 73, Davis' White Wax, Yellow Six Weeks, Robust and Fordkook Favorite (the latter not tested with culture 35). The last 4 varieties are from Quebec and were susceptible to Leach's Form IV.—J. E. Machacek.

8734. HASEGAWA, KOZO. [Control of fungus diseases of Sugi by pruning.] (Japanese, with English summary.) Bull. Forest Exp. Sta. Imperial Household 1: 17-29. 1 pl. 1925.—*Cercospora cryptomeriae*, *Phyllosticta cryptomeriae*, and *Pestalozzia shirainae* cause serious damage to *Cryptomeria japonica* in forest nurseries, especially when the atmosphere is warm and humid. The damage can be greatly reduced by pruning the branches that lie close to the ground. The plants should be sprayed with Bordeaux mixture immediately after pruning, in order to avoid infection by *Valsa cryptomeriae*, a wound parasite.—W. N. Sparhawk.

8735. HAVELIK, KARL. Kernfäule Fichte. [Heart rot in spruce.] Centralbl. Gesam. Forstw. 50: 348-357. 1924.—It is believed that the spores of *Trametes pini* enter the tree through wind checks. These are more common on trees growing on poor or on especially fer-

tile sites because in such trees the cell walls are thinner and the resistance to bending is less.—*W. N. Sparhawk.*

8736. HENRY, A. W. Browning disease of flax in North America. *Phytopathology* 15: 807-808. 1925.—This disease (*Polyspora lini*) has recently been found in Michigan, and has previously been reported from Canada.—*B. B. Higgins.*

8737. HILL, H. Wintering-over and infection of *Puccinia malvacearum* Mont. Rept. Quebec Soc. Protect. Plants 17: 81-84. 1925.—The immature teliospores of *P. Malvacearum* are able to withstand the winter in Quebec and germinate the next spring producing infection. The percentage of teliospores which overwinter and remain viable is very low so that they cannot be considered as the chief means of spring infection in Quebec.—*J. E. Machacek.*

8738. JENKINS, ANNA E. Leaf spot and blight [of maples] caused by *Taphrina* spp. U. S. Dept. Agric. Plant Disease Reporter, Suppl. 37. 371-373. 1 fig. 1925.—Three species, of which 2 are probably new, and 4 new hosts are listed. Of the new species, one occurs on *Acer saccharinum*, the other on *A. rubrum*. The 3rd species occurs on both *A. saccharum* and *A. nigrum* and is very similar to *T. acericola* reported from Italy on *A. campestre*. Judging from reports, this species produced an epiphytotic in certain localities in 1922. Only 2 American species of *Exoascaceae* on maples have hitherto been described.—*G. Hamilton Martin, II.*

8739. JOHNSON, THORVALDUR. Studies on the pathogenicity and physiology of *Helminthosporium gramineum* Rab. *Phytopathology* 15: 797-804. 1925.—An experimental study of stripe disease (*H. gramineum*) of barley was made in order to determine: (1) the effect of temperature at planting time on the severity of infection; (2) whether infection would result from inoculation of seed or seedlings; (3) the existence of physiologic forms; and (4) the conditions most favorable for growth and fructification. Naturally infected seed was planted in pots which were held at constant temperatures of 10-12°, 18-20°, 23°, 27°, and 32°C. for 7-15 days, then removed to a greenhouse bench. Some infection occurred at all temperatures tried, being most severe at 10-12°C. and very slight above 23°C. Barley seed, both natural and dehulled, was disinfected in hot water, then inoculated and planted. The greatest infection was obtained in dehulled seed but some occurred in all trials. Infection takes place just after emergence of the coleoptile. One form was found which showed temperature requirements differing from those of other cultures, indicating the existence of physiological forms. Numerous attempts to induce sporulation on artificial media gave negative results.—*B. B. Higgins.*

8740. JONES, FRED REUEL, AND CHARLES DRECHSLER. Root rot of peas in the United States caused by *Aphanomyces euteiches* (n. sp.). *Jour. Agric. Res.* 30: 293-325. 6 pl., 1 fig. 1925.

8741. LAUBERT, R. Die "Klumpenblätter"-Krankheit der Azaleen und verwandte Pflanzenkrankheiten. [Exobasidium of azaleas and related diseases.] *Gartenwelt* 29: 428-430. 2 fig. 1925.

8742. LENDNER, A. Le parasitisme du *Spinellus macrocarpa* Karst. [Parasitism of *S. macrocarpus*.] *Compt. Rend. Soc. Phys. d'Hist. Nat. Genève* 38: 21-26. 1921.

8743. LIESE. Neue Wege zur Feststellung des Gesundheitszustandes der Bäume. [New ways of determining the condition of health of trees.] *Zeitschr. Forst.- u. Jagdw.* 56: 689. 1924.—The relative resistance of forest trees against blue rot and other fungi varies directly with the water content, which is therefore an important consideration in determining the amount of injury likely to result following an attack by *Noctua piniperda*. The determination of water content is effected by measuring the resistance to an electric current. Gorz's "moisture measure" with some modifications appears best adapted for this purpose.—*J. Rooser.*

8744. McDONALD, J. Fungoid diseases of coffee in Kenya Colony. Dept. Agric. Kenya Bull. 3. 1-17. Uganda Railway Press: Nairobi, 1925.

8745. McKINNEY, HAROLD H. Foot-rot diseases of wheat in America. U. S. Dept. Agric. Dept. Bull. 1347. 1-40. 1925.—Special attention is given to take-all, the foot-rot caused by *Ophiobolus graminis*, that caused by *Helminthosporium sativum*, and to an unidentified foot-rot found in the Pacific Coast States. Several other foot-rots of minor importance are also discussed.—A new fungus, *Helminthosporium tetramera* n. sp., found associated with a foot-rot

in Oklahoma, is described.—Although take-all infested areas in this country are relatively small, they are located in important places with respect to the wheat crop. The disease seems to be established in the center of the hard winter-wheat belt, and is steadily spreading. The foot-rot problem is somewhat more acute in the spring wheat region than is generally the case in the winter wheat districts. In Kansas, *Helminthosporium sativum* is associated with *Ophiobolus graminis*, *Wojnowicia graminis*, and several species of *Fusarium*, and it is difficult or impossible to determine how much damage is attributable to any one of them. This is also true in Wisconsin where *H. sativum* is often associated with *Gibberella saubinetii*. Owing to the different temperature optima, the rôle of each parasite is likely to vary in different seasons.

—Author.

8746. MATTIROLO, O. Fungi Africani raccolti dal Dott. G. Negri nell' Etiopia meridionale (Scioa-Galla); e nell'Uganda (British East Africa) dal Reverendo Padre G. Balbo delle Missioni della Consolata di Torino. [African fungi.] Atti. R. Accad. Sci. Torino 59: 373. 1923-1924.—The author describes about 30 species of fungi collected by G. Negri and P. G. Balbo in southern Ethiopia. Two of these species are described as new: *Galera paradoxa* and *Hypoblema Negrii*.—*Felice Gioelli* (transl. by J. M. Fogg, Jr.).

8747. MORRIS, LESLIE EWART. Mildew in cotton goods, XII and XIII. 2. The growth of mould fungi on sizing and finishing materials. 3. The growth of mould fungi on steeped wheat flour. Shirley Inst. Mem. 4: 129-165. 1 pl., 1 fig. 1925.

8748. [MURASHKINSKIJ, K. E.] Мурашкинский, К. Е. Physalosporina halimodendri n. sp.—Возбудитель болезни чингилы [Physalosporina halimodendri n. sp. causing a disease of Chinzil.] Оттиск из „ Научн. Сборника Сиб. Института С.-Х. и Пром.” [Sci. Papers Sib. Inst. Agron. and Commerce] 1921: (1-8). 1 pl. 1921.—The paper gives symptoms of the disease on *Halimodendron argenteum*, with a description of the fungus, *Physalosporina halimodendri* n. sp., with Latin diagnosis; 14 references are given.—C. D. Sherbakoff.

8749. [MURASHKINSKIJ, K. E.] Мурашкинский, К. Е. О влиянии мокрой головы на вегетацию пшеницы [The influence of bunt upon the growth of wheat.] Отдельный оттиск Трудов Сиб. С.-Хоз. Академии [Works of Sib. Agric. Academy] 4. 1-15. 1925.—From the author's experiments the following conclusions are made: Most of the plants observed showed that infection with bunt results in shorter stems and decreased number of heads. It appears also that in the more susceptible wheats bunted kernels are larger than healthy ones while in the less susceptible wheats bunted kernels are shorter. No definite difference was found in bunted kernels produced by *Tilltia tritici* and *T. levis*. Twenty-nine references are given.—C. D. Sherbakoff.

8750. NAUMOV, N. A.] Наумов, Н. А. Материалы по изучению капустной килы [A contribution to the study of cabbage clubroot.] Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 49-72. 1925.—A brief review of the literature on clubroot of cabbage is given with a special consideration of the "free existence" of *Plasmodiophora* and of the mode of infection. The author's germination studies with the fungus upon various media and under various conditions failed to give positive results. It is shown that the time of infection is independent of the age of the host. However, the swellings are not produced earlier than 4-5 weeks after the time of seed planting, and infection takes place most readily when the plants are 9-10 weeks old. Infection takes place anywhere on the growing roots, but as the author's experiments show, is strictly localized according to the location of the inoculum (soil containing spores). This means also that the infectious material does not spread vertically through the soil, and that the root hairs are not necessary for infection. The arrangement and form of the swellings appear to depend on the localization of the infectious material, on the amount of moisture and on the susceptibility of the roots. Certain experiments indicate that drying of the spores destroys their viability and that no period of rest is needed for the spore to produce infection. The author tested 180 host species belonging to 49 genera. The data obtained, together with those of Halsted, Cunningham and Appel and Werth, show that the susceptibility usually is similar within the species, the most susceptible species being *Succovia balearica*, *Sisymbrium officinale*, *Thysanocarpus curvipes*, *Sinapis alba*, *Thlaspi arvense*, *Carrichtera vella*, nearly all species of *Brassica*, *Capsella*, *Camelina* (with some exceptions), and many of *Arabis*. The

tests with different varieties of cabbage showed no immunity or even high degree of resistance in any of the varieties though some apparently are definitely less susceptible than the others. Increased soil acidity plainly increases and alkalinity decreases the amount of infection. Spores kept for 1 week in 0.05% HCl and in 0.05% NaOH and then introduced into sterilized soil gave 80% and 0% infection correspondingly. Twenty six references are given.—C. D. Sherbakoff.

8751. NEVODOV'SKY, G. S. Sposterezhennia nad gribkovimi khorobami pol'ovikh roslin za chas vegetatsii 1925 roku [Fungus diseases of useful plants.] 15 p. Kiev, 1925.

8752. OCFEMIA, G. O. The occurrence of the white rust of crucifers and its associated downy mildew in the Philippines. Philippine Agric. 14: 289-296. 2 pl. 1925.

8753. OCFEMIA, G. O. The Phytophthora disease of eggplant in the Philippine Islands. Philippine Agric. 14: 317-328. 2 pl. 1925.—A parasitic species of *Phytophthora* attacking fruits of eggplant is described. The fungus reproduces asexually by conidia and chlamydo-spores, and sexually by oospores, the type of spore produced being influenced by the character of the culture medium. Spore measurements failed to determine whether this *Phytophthora* is identical with one previously described by Sawada as *P. melongenae*.—Bessie Goldstein.

8754. OCFEMIA, G. O., AND J. A. AGATI. The cause of the anthracnose of avocado, mango, and upo in the Philippine Islands. Philippine Agric. 14: 199-216. 3 pl. 1925.—Descriptions are given of anthracnoses of avocado, mango, and upo or white squash (*Curcubita pepo*). *Glomerella cingulata* appears to be the causal organism.—S. F. Trelease.

8755. OSBORN, T. G. B., AND GEOFFREY SAMUEL. Notes on two vine diseases which occurred on the River Murray in October, 1921.—Jour. Dept. Agric. South. Australia 26: 225-230. 5 fig. 1922.—A disease of vine leaves and shoot-tips is assigned to *Aureobasidium vitis*, and a mosaic mottling of vine-leaves is attributed to the effect of frost.—G. Samuel.

8756. PANTANELLI, E. Contributions à la biologie du mildiou de la vigne. [The biology of grape mildew.] Prog. Agric. et Vitic. 75: 87-89, 111-115, 161-165. 1921.—The author discusses the relation of moisture to infection by *Peronospora*, with some observations on the relation of soil moisture to stomatal movement. Temperature, light and the age of the leaves are also considered as factors in infection. The attraction of the zoospores to the stomata is attributed to a chemotropic response to volatile degradation products of proteins. The effect of the fungus on the carbohydrate, nitrogen, phosphate, and ash content of the infected area is discussed. The extent of growth of an infected area is considered to be governed by water relations.—E. L. Proebsting.

8757. PAPE, H. Die Hartfäule-Krankheit der Gladiolen und ihre Bekämpfung. [Hard-rot of gladioli and its control.] Gartenwelt 29: 676-680. 4 fig. 1925.—Symptoms are described, and some observations on varietal resistance and on control of the disease by disinfection of the corms are detailed.—J. C. Th. Uphof.

8758. PARKER, CHARLES S. Coryneum blight of stone fruits. The Howard Review 2: 3-40. 5 pl. 1925.—This presents the characteristics of *Coryneum beijerinckii* on stone fruits and in artificial culture, with special regard to the various symptoms seen in the field and the morphological characters which distinguish it. Special attention was given to the germination of spores and the manner of infection, which was apparently through the stomata. A slightly different physiological strain of this fungus is tentatively discussed.—A. F. Camp.

8759. PELTIER, GEORGE L. A study of the environmental conditions influencing the development of stem rust in the absence of an alternate host. IV. Over-wintering of urediniospores of *Puccinia graminis tritici*, V. The period of initial infection of urediniospores of *Puccinia graminis tritici* on wheat, VI. Influence of light on infection and subsequent development of urediniospores of *Puccinia graminis tritici* on wheat. Nebraska Agric. Exp. Sta. Res. Bull. 35. 1-12. 1925.—The author concludes from investigations conducted in both field and green house that the urediniospores of *P. graminis tritici* do not overwinter under conditions that exist at Lincoln, Nebraska. Under field conditions, then, the longer the optimum conditions for infection exist the more uredinia will be produced, although some infection can occur when these conditions prevail for only a few hours. Light is not a factor in the initial infection of wheat by urediniospores of stem rust, but it is essential for the development of the disease, in that light is essential for the growth of the host plant and as such con-

tributes to the development of the pathogene, perhaps through a food relation.—*T. A. Kiesselbach*.

8760. PELTIER, G. L. Further studies of the viability of the urediniospores of *Puccinia graminis tritici*. Nebraska Agric. Exp. Sta. Res. Bull. 34. 1-12. 1925.—Data are presented concerning the relation of humidity and temperature to the longevity of the urediniospores of this rust. Physiologic Form III was used and the investigation was made under controlled conditions. With increasing temperature above 5°C. the viability of the spores decreased irrespective of the relative humidity. At any stated temperature the viability of the spores is greatest at moderate humidities, and the optimum is 49% humidity. Under storage conditions of 5°C. and 49% relative humidity, 30% germinated after 52 weeks. This affords a convenient and economical method of retaining rust material in pure condition over a long period as compared with continuous greenhouse cultures.—*T. A. Kiesselbach*.

8761. PEYRONEL, B. Alcune osservazioni sulla biologia della *Rhizoctonia della patata* (*Hypochnus solani* Prill. et Del.) [Observations on the biology of *Rhizoctonia* of potato.] Boll. Mens. Inform. Notiz. R. Staz. Patol. Veg. Roma 5: 4-19. 2 fig. 1924.—The disease was found in the Valli Valdesi and at Rome, but probably occurs throughout Italy. In the first locality it is associated with *Vermicularia varians* and with *Spondylocadium atrovirens*. Injury varies with different varieties; 2 varieties resistant to drought were resistant to *Rhizoctonia* also. Dryness is evidently an important factor in the susceptibility of the potato to this fungus. The mitigation of the disease by cultural practices is suggested.—*R. Ciferri* (transl.).

8762. POLLOCK, N. A. R. Tomato wilt and resistant varieties. Queensland Agric. Jour. 23: 188-190. 1925.—The Fusarium wilt of tomatoes was probably introduced into Australia in imported seed. Seed-bed sterilization and seed treatment have given only partial control. From a large number of varieties tested it was noted that the earlier varieties were more susceptible. Six varieties were found to be generally immune and are recommended for growing.—*D. F. Jones*.

8763. POOLE, R. F. Sweet potato disease studies. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 392-399. 1 pl. 1924 [1925].—Pox or ground rot (*Cytospora batatas*) was worse in 1923 than in the preceding 3 years, a condition attributed to the very dry season. The use of lime greatly increased the severity of pox and also decreased yields. The use of 300 to 400 pounds of sulphur per acre gave approximately as efficient control of pox as larger amounts and resulted in a marked increase in yield. Applications in excess of 500 pounds resulted in reduced yields. Sulphur can be effectively applied with the fertilizer. Light applications over a 2-3 year period are suggested rather than 400 or 600 pounds in 1 year. Species of bacteria, fungi and Actinomyces were obtained in isolation, certain of the latter being constantly present. The varieties Red Brazil, White Yam, Porto Rico, and Nancy Hall were less severely affected than the Red Jersey and Yellow Jersey strains.—In studies with the scurf or soil stain disease (*Monilochaetes infusans*) on bedded roots, spread was more rapid in sand adjusted to 14 and 23% moisture than in saturated or nearly dry soils. Cultural studies indicate that the organism grows best in an alkaline medium. Lime was found to increase and sulphur to decrease the severity of scurf. Best control followed the use of 500 pounds of sulphur per acre. Other factors besides the increase in soil acidity due to sulphur are believed to be important in reducing scurf following this treatment.—*Wm. H. Martin*.

8764. POOLE, R. F. Tomato disease studies. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 400-403. 1924. [1925].—In a spray test with the Bonny Best variety, 2 applications of Bordeaux mixture and of copper-lime dust gave no yield increase, due to the slight infection of leaf spot (*Septoria lycopersici* Speg.).—In a test with the Greater Baltimore variety, 4 applications of standard and double strength Bordeaux mixture were made in comparison with copper-lime dust. In this test leaf spot was very severe. All the treatments gave larger yields than the checks, but the dust was less effective than the liquid sprays. The standard 4-4-50 Bordeaux mixture gave as good returns as an 8-8-50 mixture.—The following organisms were isolated: *Rhizopus* sp., *Fusarium* sp., *Macrosporium solani*, *Oidium oospora lactis* and *Bacillus carotovorus*, the latter causing the most serious rotting.—*Wm. H. Martin*.

8765. RAMSEY, G. B. Sclerotinia species causing decay of vegetables under transit

and market conditions. Jour. Agric. Res. 31: 597-632. 7 pl., 3 fig. 1925.—*Sclerotinia sclerotiorum* and related species cause great damage to truck crops during transit, storage and marketing, particularly to produce harvested during wet weather. Morphological and cultural studies show that there is no difference between cultures of *Sclerotinia* arising from sclerotial and mycelial plantings, other than variation in rate of growth. At temperatures approaching the minimum, the sclerotia formed are likely to be larger than normal for room temperature, while at temperatures nearing the maximum they are often smaller than normal. All species under observation produced microconidia at some time during their life history. The amount of available food is the chief factor in determining the time of microconidial production, since media unfavorable for vegetative growth induce a rapid and prolific production of microconidia. Previous to this time apparently no one has ever observed germination of these microconidia, but the writer was able to induce their germination; however they do not play an important rôle in the life history.—All species produce a watery, odorless type of decay. Infection is readily obtained by inoculation with sclerotia and mycelium. Moisture and temperature are the important limiting factors in determining infection. Infection may take place through intact as well as wounded surfaces. Infection of freshly cut surfaces of turnip and carrot was obtained by holding them over "shooting" apothecia. An ascospore suspension in distilled water sprayed over lettuce leaves also caused infection—Cross inoculation studies show that *S. sclerotiorum*, *S. intermedia*, *S. minor* and *S. ricini* are capable of producing decay in a wide range of vegetables. None of the species were pathogenic to potato tubers, and beet roots were also somewhat resistant. *S. minor* produced a more rapid decay than any of the other species at 20°C. Plate cultures grew and infection occurred at temperatures as low as -5°-0°C. *S. intermedia* grew fastest and produced most decay at this temperature. With the exception of *S. intermedia* which stops growth at 30-31°C., all other strains were able to make slight growth on potato-dextrose agar at 32-33°C. Inoculation experiments conducted at this temperature proved negative. Ascospores germinate readily in water and nutrient solutions throughout a range of temperature from 3-31°C.—A summary of all observations and experiments shows that over 90% of the *Sclerotinia* cultures isolated from vegetable produce on the market are of the large sclerotial type and belong to the species *S. sclerotiorum*.—*Author*.

8766. RANDS, R. D. South American leaf disease of Para rubber. U. S. Dept. Agric. Dept. Bull. 1286. 1-18. 6 pl., 1 fig. 1924.—South American leaf disease of Para rubber (*Dothidella ulei*) is described, and its importance as a factor to be considered in contemplated rubber planting in the American tropics is pointed out. The disease is indigenous in the native home of the Para rubber tree (*Hevea brasiliensis*) and related species occurring in Brazil, and the Guianas, to which, with the exception of the island of Trinidad, it is apparently still confined. Owing to conidial infection from scattered "wild trees" in the nearby jungles and its extremely rapid spread, it has usually caused great damage wherever regular plantings of the rubber tree were attempted. This disease was largely responsible for the failure of the formerly very promising rubber plantation industry of the Guianas. The results of a survey of the situation in 1923 and a full summary of previous investigations are presented. Owing to lack of practicable control measures renewed planting of rubber in the infected regions is not advised, but attention is directed to what are probably equally suitable areas in other parts of the American tropics where the disease does not occur. However, on account of possible importation and establishment before detection, the disease remains a latent menace not only to new American enterprises but to *Hevea* rubber plantations throughout the world. It is, therefore, recommended that the occasional healthy trees apparently immune or highly resistant to leaf disease which were found in the deserted Guiana plantings be selected, propagated vegetatively, and tested under suitable conditions with the object of isolating satisfactory yielding, resistant strains.—*Author*.

8767. REED, GEORGE M., AND T. R. STANTON. Relative susceptibility of selections from a Fulghum-Swedish select cross to the smut of oats. Jour. Agric. Res. 30: 375-391. 4 pl. 1925.

8768. REICHERT, I. The smut diseases of sorghum in Palestine. Zionist Organization Agric. Exp. Sta. and Colonisation Dept. Leaflet 11. 1-10. 7 fig. 1925.—Two smut diseases,

kernel smut (*Sphacelotheca sorghi*) and head smut (*Sorosporium reilianum*) cause considerable loss to sorghum in Palestine. Kernel smut is found mainly in upper Galilee; head smut, in Samaria. A description of both diseases and methods of control are given. In experiment to control kernel smut Uspulun and Germisan (0.5% solution, 1 hour) gave complete control of smut and 85% germination. Sublimate (0.15%, 30 minutes) gave 2.4% smutted plants and 41% germination.—(From author's summary.)

8769. REISS, P. Données physico-chimiques sur une tumeur végétale infectieuse. [Physico-chemical data on an infectious plant tumor.] Compt. Rend. Soc. Biol. 93: 1371-1373. 1925.—An epidemic of potato wart in the valley of the Bruche is described. The infection is due to *Synchytrium endobioticum* and is associated with an increase in H-ions. The infected tissue has a pH of 5.6-5.9; the normal, a pH of 6.01-6.21.—Oran Raber.

8770. RIVIER, A. Observations sur le *Sclerotinia libertiana* Fuck. [Observations on *S. libertiana*.] Prog. Agric. et Vitic. 78: 400-402. 1922.—(See also Bot. Absts. 12, Entry 1254.)

8771. ROLDAN, E. F. The soft rot [*Thielaviopsis paradoxa*] of pineapple in the Philippines and other countries. Philippine Agric. 13: 397-406. 2 pl. 1925.

8772. ROSE, DEAN H., AND CARL LINDEGREN. Phytophthora rot of pears and apples. Jour. Agric. Res. 30: 463-468. 2 pl. 1925.—This *Phytophthora*, found on the Chicago market in pears and apples from Michigan, and in apples from Washington and Idaho, when inoculated into healthy pears and apples reproduced the diseases and was easily recovered from the affected tissues. Evidence is presented which indicates that the *Phytophthora* isolated from pears and apples is similar to and probably identical with *P. cactorum*. The observations of Lafferty and Pethybridge are confirmed, that the *Phytophthora* from apple and pear produces "sphaero-conidia" and both paragynous and amphigynous antheridia.—Authors.

8773. [RUSSAKOV, L.] Русаков, Л. Массовое поражение озимой ржи *Puccinia coronifera* Kleg. осенью 1924. [A mass infection of winter rye with *Puccinia coronifera* Kleb. in the fall of 1924.] (German summary.) Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 7-11. 1925.—The author reports his observations of an unusually severe and wide outbreak of *P. coronifera* in the fall of 1924 upon young winter rye plants in the central part of southeastern Russia. The development of *P. dispersa* and *P. graminis* also was very strong, and in 85% of the examined rust pustules of *P. coronifera* teliospores were found. The author suggests that the reason for these facts probably lies in the unusually dry fall and that therefore the influence of environment upon immunity of plants from rusts is probably greater than generally believed.—C. D. Sherbakoff.

8774. [RUSSAKOV, L. F.] Русаков, Л. Ф. Из исследований по ржавчине хлебов в Амурской губ. в 1925 г. [Some investigations of cereal rusts in Amur government in 1925.] (German Summary.) Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 128-136. 1925.—It is reported that in 1923 the wheat was most severely and generally attacked by rust in eastern Siberia. In the Amur government the disease caused over 70% reduction of the crop. This extreme reduction of the yield led to use of imported wheat seed not suitable to local conditions. The author's study of the infected straw showed that the appearance of *P. triticea*, in addition to the slower developing *P. graminis* was from 3 to 4 weeks earlier than that of the latter. The upper internode was most affected, and the infection was generally more severe than any observed by the writer. In the Amur government the appearance of aecia is very late—in 1924 during last ten days in June, nearly at the same time for different rusts; and in the dry 1925 aecia of *Puccinia helianthi*, and *Aecidium saussureae*, *P. elymi* and *P. agropyri* during last 3 days in June. The author's observation of appearance of aecia in Voronej and Leningrad show that the aecia appear much earlier, usually about the middle of May. The difference is ascribed to the unusually dry and cold winter of the Amur government and to the fact that many of the intermediate hosts are either absent or present in a very limited number. It is stated that the appearance of wheat rust in the territory is not due to the usual source—overwintering of the uredo spores on winter cereals and the infection through the intermediate hosts, both being absent there and the spring not favorable for development of telia—but,

in the author's opinion, is due to wind-borne rust spores brought in from long distances. The latter gives basis for the Klebahn-Gassner theory. Seventeen references are given.—*C. D. Sherbakoff.*

8775. SAMUEL, GEOFFREY. Annual report of the lecturer on plant pathology. Rept. Min. Agric. South Australia Year ending June 30, 1925: 80-81. 1925.—A brief review of the fungi attacking economic plants in South Australia is given, and the following new records are listed: *Peronospora parasitica* on cauliflowers, *Colletotrichum tabificum* on tomatoes, *Uromyces fabae* on beans, *Bacterium campestre* on cabbages.—*Author.*

8776. SAMUEL, G. A pear tree canker. Jour. Dept. Agric. South Australia 27: 880-884. 1924.—A canker, found occasionally in South Australian orchards, is attributed to *Coniothecium* sp.—*W. M. Carne.*

8777. SAMUEL, GEOFFREY. Brown rot of citrus fruit. Jour. Dept. Agric. South Australia 26: 112-118. 5 fig. 1922.—Owing to the identification of this disease for the first time in South Australia a popular description of R. E. Smith's work on *Pythiacystis citrophthora* is given.—*Author.*

8778. SAMUEL, G. Take-all investigations. Jour. Dept. Agric. South Australia 27: 438-442. 1923. 1134-1147. 1924.

8779. SCHAFFNIT, E., UND K. BÖNING. Die Brennfleckenkrankheit der Bohnen. Forschungen auf dem Gebiet der Pflanzenkrankheiten und der Immunität im Pflanzenreich. [Anthracnose of beans. Investigations in the field of plant diseases and immunity in plants.] 184 p., 9 pl., 26 fig. Gustav Fischer: Jena, 1925.

8780. SHAW, F. J. F. Studies in diseases of the jute plant. (2) *Macrophoma corchori* Saw. Mem. Dept. Agric. India Bot. Ser. 13: 193-199. 2 pl. 1924.—*Macrophoma corchori* is the cause of stem rot of jute in India. The pycnidium occurs only on the jute plant. A sclerotial form occurs in culture and on other hosts (potato, cotton, etc.) in addition to jute. The amount of potash in the soil is a determining factor in the incidence of the disease.—*Author.*

8781. SIMONET. Note sur le *Phytophthora infestans*. Jour. Soc. Nat. Hort. France 26: 272-274. 1925.

8782. SMALL, W. Notes on species of *Fusarium* and *Sclerotium* in Uganda. Kew Bull. 1925: 118-126. 1925.—An account is given of *Fusarium udum* as the cause of a potato rot, and of *Sclerotium bataticola* and *Fusarium udum* associated with a wilt or foot-rot of beans. Taxonomic notes are included.—*T. J. Fitzpatrick.*

8783. SNELL, KARL. Krebsfeste Kartoffelsorten. [Potato varieties resistant to the wart disease.] Illus. Landw. Zeitg. 44: 353. 1 pl. 1924.

8784. SOUTH, F. W., AND A. SHARPLES. "Mouldy rot" disease of *Hevea brasiliensis* in Malaya. Dept. Agric. S. S. and F. M. S. Bull. 37. 1-31. Kaula Lumpur, 1925.

8785. STELL, F. A fungus disease of cabbages. Bull. Dept. Agric. Trinidad and Tobago 20²-4: 116. 1922.—A brief description of the cabbage disease due to *Fusarium* is given and the growing of immune varieties as advised in the U. S. A. is recommended.—*Florence A. McCormick.*

8786. STOTZ, G.-J. Aperçus sur l'invasion de mildiou en 1921 en Algérie. [Observations on mildew in 1921 in Algeria.] Prog. Agric. et Vitic 77: 494-495, 540-543, 571-575, 611-618. 1922.—Observations on relative susceptibility of varieties of grapes to *Oidium*, on the influence of different rootstocks on susceptibility and on the effect of time of cultivation on infection are made. The relation of the stomata to infection, both from the structural and the functional standpoints, is discussed. Control measures are considered at some length.—*E. L. Proebsting.*

8787. SUNDARARAMAN, S., AND T. S. RAMAKRISHNAN. The "Mahali" disease of coconuts in Malabar. Mem. Dept. Agric. India. Bot. Ser. 13: 87-97. 2 pl., 1 fig. 1924.—A disease of coconuts called nut-fall or "Mahali" has been noticed in certain parts of Malabar after the heavy south-west monsoon during the last 2 years. Young as well as nearly mature nuts fall off in large numbers. The basal portions of the fallen nuts are of a dark brown color and are overgrown by a species of *Phytophthora*. The kernel of the affected fruits is rotten and useless. Sometimes the inflorescence, axis, and branches are affected. Inoculation experiments show that *Phytophthora* is the cause of the disease and it is probably the same as *P. omnivora* var. *arecae*, which causes the "Mahli" or "Koleroga" of areca nuts. The disease

appears on coconuts only where they are interspersed with areca nuts and where the latter are affected by "Koleroga." Spraying with Bordeaux mixture has been found successful in preventing nut-fall wherever tried.—*Author*.

8788. SWARZ, CARL A. A serious disease of the *Kentia* palm. *Florists' Exchange* 53: 1412. 1922.—Specimens of *Kentia Belmoreana* were injured and killed by *Glomerella rufomaculans*. Spots were evident on the tips of the leaves, and in severe cases cankers appeared at the bases of the stems. Crowding, overwatering, and potting too deeply seemed to be important factors in lowering the resistance of the plants. After the plants were repotted, dipped in Bordeaux mixture, and the cultural errors corrected, the disease appeared to be checked. *Kentia Forsteriana* is said to be resistant.—*F. F. Weinard*.

8789. [TALIEV, V. I., AND A. I. GRIGOROVICH.] ТАЛИЕВ, В. И., и А. И. Григорович К влиянию головни на растениехозяина. [The influence of smut upon host.] (French Summary). Труды Московского Отд., Секции по Микол. и Фитоп. Русс. Бот. О-ва [Proc. Moscow Div. Section Myc. and Phytopath. Russian Bot. Soc.] 1: 47-53. 1923.—The experiments were carried on with *Avena ludoviciana* inoculated with *Ustilago avenae*. Results showed that the stooling is noticeably greater while the stems' length and the dry weight are noticeably smaller in the infected than in the non-infected plants.—*C. D. Sherbakoff*.

8790. VALLEAU, W. D., RUDPH KENNEY, AND E. J. KINNEY. Root-rot [*Thielavia basicola*] of tobacco in Kentucky and its control. (A progress report). *Kentucky Agric. Exp. Sta. Bull.* 262. 155-180. 6 fig. 1925.

8791. WEIMER, J. L. Crown wart of alfalfa in Indiana. *Phytopathology* 15: 807. 1925.

8792. WEISS, FREEMAN. The conditions of infection in potato wart. *Amer. Jour. Botany* 12: 413-443. 4 pl., 3 fig. 1925.—The common potato is the principal host of wart (*Synchytrium endobioticum*). All of the shoot system may be infected, but not the root. The life history of the parasite is briefly described. There is no evidence of biologic strains. In general conditions favorable to vigorous growth of the host are favorable to infection. Germination of both resting and soral sporangia occurs in water. The most favorable condition is periodic flooding of the soil followed by drainage and aeration. The complete thermal range for germination of resting sporangia was not determined, but infection resulted when they germinated between 10° and 28° C. Infection from germinating soral sporangia occurred between nearly 0° and 30° C. Under constant soil temperature, infection was limited to 12°-24° C.; but with variable soil temperature, as in the field, infection occurs when the mean is about 21°, though the upper range may be as high as 30° C. The most favorable soil reaction is from neutral to slightly acid, the range being about pH 3.9-8.5. Because of the very slow dissemination of the organism through the soil and its strictly parasitic mode of life, it is not an aggressive parasite and it may readily be controlled through seed selection, cultivation of immune varieties and adequate quarantine.—*E. W. Sinnott*.

8793. WHITEHEAD, T. Experiments with "finger and toe" disease of swedes, with a note on loss caused by rabbits. *Welsh Jour. Agric.* 1: 176-184. 1925.

8794. WILLAMAN, J. J., N. C. PERVIER, AND H. O. TRIEBOLD. Biochemistry of plant diseases. V. Relation between susceptibility to brown rot in plums and physical and chemical properties. *Bot. Gaz.* 80: 121-144. 1925.—Eleven varieties of plum which exhibited various degrees of resistance to brown rot were studied. Crude fiber, pentosans, and dry matter determinations of the fruit were made and the toughness of skin and firmness of flesh were measured at various degrees of ripeness. Some correlation was noted between resistance, crude fiber and pentosan content. Toughness of skin decreases in all varieties as the fruits ripen but the change is greatest in the most susceptible forms. Changes in firmness of flesh follow closely those in toughness of skin. It is believed that both of these mechanical factors are of importance in conferring resistance on a given variety, though they are probably based in large measure on the crude fiber and pentosan content.—*J. C. Walker*.

8795. WILLIAMS, C. B. Summary of a report on the frog hopper blight of sugar cane in Trinidad. *Bull. Dept. Agric. Trinidad and Tobago* 192: 52-65. 1921.—Brief consideration of 2 distinct kinds of root rot fungi of the sugar cane, the *Marasmius* and *Odontia-Himantia* types, is included in this paper.—*Florence A. McCormick*.

8796. WILTSHIRE, S. P. The wither-tip disease of limes. *Kew Bull.* 1925: 401-403. 3

fig. 1925.—An account is given of the progress of the disease caused by *Gloeosporium limeticolum* in the island of Dominica.—T. J. Fitzpatrick.

8797. WINKLER, HANS. Die Schädlinge und Krankheiten des Reises. [Pests and diseases of rice.] Tropenpflanzer 28: 174-189, 242-255. 1925.—*Striga lutea*, a green hemiparasite belonging to the Scrophulariaceae causes much damage in Java in the rice fields. *Sclerotium Orizae* occurs on seedlings and on full grown plants, doing considerable harm to the stem. *Ustilaginoides virens* (green smut) is very common in China and Japan. *Tilletia horrida*, (rice blast or smut) attacks the floral parts. Thus far *Sclerospora macrospora* has been of little importance. *Helminthosporium oryzae* is widely distributed. It is apparently not as harmful in British India as in Japan. *Pericularia oryzae*, (rotten neck) is the most frequent of all rice diseases. A number of other fungus diseases of minor importance are described. Among diseases of non-parasitic origin tip-burn and straight head are especially mentioned.—J. C. Th. Uphof.

8798. WINSTON, JOHN R. Citrus scab: its cause and control. U. S. Dept. Agric. Dept. Bull. 1118. 1-38. 16 pl., 6 fig. 1923.—A discussion of geographical distribution, economic importance, conditions influencing infection, and effectiveness of control through the use of Bordeaux-oil emulsion as a dormant clean-up spray and as a protective coating on the very young fruit. Histological and cultural features of the causal organism (*Sphaceloma fawcetti*) are given and attention is called to its erroneous designation as *Cladosporium citri* Massee as a result of confusion with a common saprophyte in citrus lesions.—H. R. Fulton.

8799. WINSTON, JOHN R., JOHN J. BOWMAN, AND WALTER J. BACH. Relative susceptibility of some rutaceous plants to attack by the citrus-scab fungus. Jour. Agric. Res. 30: 1087-1093. 1925.—The citrus scab fungus, *Sphaceloma fawcetti*, attacks a comparatively narrow range of plants in the family Rutaceae, as indicated by observations and inoculations made on 22 genera and 35 species. Many citrus forms appear to be immune, while the susceptible ones exhibit all grades of resistance. When both parents are susceptible to scab the progeny in general is more likely to be affected than when only one parent is attacked. Outbreaks are very erratic, varying with individual trees and season.—Walter J. Bach.

DISEASES CAUSED BY BACTERIA

8800. AULER, HANS. Zur Histogenese der Tumefaciensgeschwülste an der Sonnenblume. [The histogenesis of tumefaciens swellings on sunflower.] Zeitschr. Krebsf. 21: 354-360. 1924.—Very young seedlings of *Helianthus annuus* were inoculated with *Bacterium tumefaciens* through wounds, 0.5 mm. deep, about half way down the roots. Galls began to appear in about a week, and by the end of a month they reached the size of a cherry. The tumors were derived from proliferating cells of the cambium and their resemblance to the sarcomatous tumors in animals was striking. The cells of the proliferating tissue showed a much greater development of nuclei than the normal, and the variations in the nuclear structure frequently approximated more closely those characteristic of malignant tumors than of ordinary embryonic tissue. In infected parts the proliferating cells developed in a radial direction and destroyed the tissue as far as the epidermis. This sarcomatous type of tumor is stated to be the most frequent result of inoculation with *Bact. tumefaciens*, although the teratoid tumors—which, according to E. F. Smith, originate in the totipotent cells—also occur. The organism could not be differentiated from the surrounding tissue by staining.—M. N. Levine.

8801. BLUMENTHAL, FERDINAND, UND HANS HIRSCHFELD. Beiträge zur Kenntnis einiger durch *Bacterium tumefaciens* hervorgerufenen Pflanzengeschwülste. [Plant swellings produced by *Bacterium tumefaciens*.] Zeitschr. Krebsf. 18: 110-125. 1921.—Inoculation experiments with *Bacterium tumefaciens* on different plants, but chiefly on geraniums, tomatoes, and sunflowers, showed that under the experimental conditions malignant tumors were not a common occurrence, that true metastasis was absent, and that the formation of crown-galls interfered but little with the normal development and activities of the host plants. These results led to the conclusion that plant tumors, caused by *Bact. tumefaciens*, although a very interesting phenomenon *per se*, have little bearing on the problem of human and animal cancer. They especially preclude the probability that a parasite of this type has very much to do with

human cancer. Whether tumors produced by this organism are able without the aid of the pathogen to cause further tumor development, the writers are undecided, although they obtained some evidence that such may be the case in geranium.—*M. N. Levine.*

8802. BLUMENTHAL, F., HANS AULER, UND PAULA MEYER. Über das Vorkommen neoplastischer Bakterien in menschlichen Krebsgeschwülsten. [The occurrence of neoplastic bacteria in human cancer tumors.] Zeitschr. Krebsf. 21: 387-410. 1924.—The writers succeeded in isolating a number of bacterial strains from a malignant human tumor and in one case from that of a dog. Some of these strains, namely, "P. M.," "Hübner," "Lehmann," and "Braun" possessed the capacity to produce malignant tumors in rats. It is possible that this infectiveness might be discovered also in the other strains, namely, "Bendler," "Ziemen," "Rode," "Zerbst," "Schulz," and "Hund," the latter isolated from canine tumor. The authors suggest that these bacteria are probably transmitters of the tumor irritants. In their histological structure, especially when transplanted, the tumors showed the typical characters of sarcoma or carcinoma, growing to half the size of the animal and forming metastases almost as large as a walnut. Cultures of the parasite produced tumors on sunflowers, closely resembling those caused by *Bacterium tumefaciens*, with which the neoplastic bacillus from human cancer is thought to be closely allied.—*M. N. Levine.*

8803. [BURGWITZ, G. K.] Бургвиц, Г. К. Вактериальный ожог и пятнистость сои (*Glycine hispida* Maxim.) [A bacterial blight and spot of soy bean (*G. hispida*.)] (German Summary.) Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 38-41. 1925.—The paper contains a brief review of American works on bacterial diseases of soy beans with a report on finding, in 1923, at the Main Bot. Garden, of soy bean blight on plants grown from seed obtained from Urga, Mongolia. The bacteria causing this disease are referred to *Bacterium glycineum*. The circumstances indicate introduction of the disease with the seed and, indirectly, show its presence in Mongolia. This emphasizes the importance of a broad study of the occurrence of plant diseases in order to prevent their introduction and also the importance of seed examination not only for germination, etc., but also for freedom from diseases.—*C. D. Sherbakoff.*

8804. COSTA CRUZ, J. DA. L'influence de la concentration des bactéries sur la production du bactériophage. [Influence of the concentration of bacteria on the production of bacteriophage.] Compt. Rend. Soc. Biol., 92: 310-311. 1925.—A great concentration of bacterial cells or cell extract is inimical to the production of bacteriophage.—*G. F. R. (Contrib. by Absts. Bact.).*

8805. COTTRELL-DORMER, W. Gumming disease [of sugar cane]. Queensland Agric. Journ. 24: 336. 1925.

8806. GRATIA, ANDRÉ, ET SARA DATH. De l'action bactériolytique des Streptothrix. [The bacteriolytic action of Streptothrix.] Compt. Rend. Soc. Biol. 92: 1125-1126. 1925.—Members of the Streptothrix group have a bacteriolytic action on both living and dead cultures of various bacteria. A neutral or alkaline reaction is best and oxygen is necessary. Old cultures of *Streptothrix* with spores are preferred. Such dissolved cultures, when injected into animals, will not cause infection, but will evoke specific antibodies.—*G. F. R. (Contrib. by Absts. Bact.).*

8807. [ISRAILSKY, V. P., AND E. V. RUNOV] Израильский, В. П., и Е. В. Рунов. Устойчивость сортов картофеля к бактериальным заболеваниям и вирулентность бактерий. [Resistance of potato varieties to bacterial diseases and virulence of the bacteria.] (German Summary.) Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 1-7. 1925.—The experiments were carried with *B. fluorescens*, *B. xanthochlorum* Schust. and a "Bacterium No. 1," the latter being the authors' isolation from a diseased potato tuber, pathogenic on potato tubers, of which a brief description is given. This bacterium is considered to be closely related to the other two. Of its cultural characters attention is called to the production of crystals that nearly fill the test tube in which the organism has been grown for a long time in beef-peptone agar. A milder degree of this character was observed also in *B. xanthochlorum*. The reported inoculation experiments showed that the development of rot was not correlated with amount of starch in the tubers and that some varieties (Gratzia, Svituz) showed a pronounced degree of

resistance. Virulence tests showed that it is weakened by continuous retransfer on beef-peptone agar and partly sterilized soil with chlorinated water, and increased by passing through soil or potato tubers. Footnote references are given.—*C. D. Sherbakoff.*

8808. JAMES, LAWRENCE B. Bacterial count of head lettuce. *Amer. Food Jour.* 20: 302-304, 310. 1925.—Samples of market lettuce were examined daily for 5-7 days to determine their bacterial count. The outer leaves were rejected, the samples originating from firm leaves in the middle portion of the head. Fresh heads had lower counts than were obtained a few days later. The center of the head at first had a much lower bacterial content than the outer part, but this difference disappeared after 4 days. Washing the heads increased the bacterial count and the tendency to decay.—(*From abst. by Jean Broadhurst (Contrib. by Absts. Bact.).*)

8809. LAUBERT, R. Die Zweigkrankheit der Oliven. [Twig disease (*Pseudomonas savastonii*) of olives.] *Gartenwelt* 29: 502. 1 fig. 1925.

8810. LEVINE, MICHAEL. The effects of radium emanation on the crown gall disease. *Amer. Jour. Roent. Radium Therapy* 14: 221-233. 23 fig. 1925.—The effect of buried glass capillaries containing radium emanation on the crown gall tissue on the geranium is similar to that produced on normal plant tissue. Short exposures of crown gall to radium emanation (0.1-0.6 mc.) produces little visible effect on the surrounding tissue. Longer exposures and larger doses induce necrosis of the tissue immediately surrounding the tube and extending progressively to a radius of 0.5-5 mm.—*Author.*

8811. MAGROU, J. Recherches expérimentales sur le cancer des plantes. [Investigations on cancer of plants.] *Ann. Inst. Pasteur* 38: 851-872. 14 fig. 1924.

8812. MICKLE, F. L., AND R. S. BREED. A gaseous fermentation of tomato pulp and related products. *New York [Geneva] Agric. Expr. Sta. Tech. Bull.* 110. 1-27. 1925.—The causative organism was isolated and studied, and the name *Lactobacillus lycopersici* Mickle applied. It appears to be one of a group of lactic acid organisms associated with tomatoes and the tomato industry in much the same way that other varieties of lactic acid organisms are associated with milk products, sauerkraut, and silage. The biology and description of the organism are detailed. Methods of eliminating the fermentation were tried out on a small scale in the laboratory and then applied to factory operation. The results of heat-resistance studies show that a temperature of 65°C. for 5 minutes or 76°C. for 2 minutes destroys the organism in catsup. Slightly longer exposures were needed in pulp.—*R. S. B. (Contrib. by Absts. Bact.)*

8813. PURPURA, F. Microorganismi del cancro e del sarcoma. [Microorganisms of cancer and sarcoma.] *Pathol.* 16: 621-622. 1924.

8814. REICHERT. Über die tumorerzeugenden Bakterien. [The tumor producing bacteria.] *Zeitschr. Krebsf.* 22: 446-449. 1925.—On subjecting 10 bacterial strains isolated by Blumenthal and his coworkers from lymphatic carcinomas to a comprehensive bacteriological test, the author found 1 of the strains, designated as "P. M." to be identical with *Bacterium tumefaciens* E. F. S.; 8 more strains could be grouped in 3 physiologic categories; and the 10th ("Hübner") strain occupied a unique position, showing a resemblance to the *Proteus* and *Pyocyanus*-forms. The conclusion is reached that the presence of bacteria in tumor tissue may be connected with some ultramicroscopic virus which serves as the real irritant.—*M. N. Levine.*

8815. REICHERT, FR. Ueber bazillogene Tumoren und tumorerzeugende Bakterien. [Tumors bearing bacilli, and tumor-producing bacteria.] *Deutsch. Med. Wochenschr.* 5: 1306. 1925. (See preceding Entry.)

8816. RIKER, A. J., AND G. W. KEITT. Second report of progress on studies of crown gall in relation to nursery stock. *Phytopathology* 15: 805-806. 1925.—Further evidence is reported indicating that the majority of malformations found on piece-root apple grafts develop incidental to the grafting process without the intervention of *Bacterium tumefaciens*.—*B. B. Higgins.*

8817. ROLDAN, E. F. Notes on soft rot of radish. *Philippine Agric.* 14: 185-188. 1 pl. 1925.—*Bacillus carotovorus* Jones, isolated from radishes having soft rot, was pathogenic on radish, pechay, mustard, lettuce, tomato, and pepper.—*S. F. Trelease.*

8818. SAMUEL, G. Black rot [*Bact. campestre*] of cabbages and cauliflowers in South Australia. *Jour. Dept. Agric. South Australia* 28: 1071-1076. 1925.

8819. SAVASTANO, LUIGI. Delle epidemie italiane del mal secco negli agrumeti, albicocchi, ficheti, noceti e gelseti. [The Italian epidemics of "die back" in citrus, apricot, fig, walnut and mulberry orchards.] Ann. R. Staz. Sper. Agric. e Fruttic. Acireale 7: 89-176. 6 pl. 1923.—This is written "for the grower-pathologist with an agricultural view-point," and is a revision of a more extensive publication by the author entitled "Patologia arborea applicata," Naples, 1910. Four related diseases of citrus, apricot, fig, walnut and mulberry are systematically described. They are attributed to bacteria and differentiated into die-back (mal secco), gummosis (mal di gomma), foot-rot (cancro del pedale), and root-rot (marciume radicale). The relation of each of these diseases to the others in the group, and their diagnosis and differentiation from injuries are given. The organisms mentioned in relation to these diseases are: *Pseudomonas citriputele* and *Bacterium citrarificiens* in citrus, *Bacillus amylovorus* in apricots, *Bact. fici* and *Bact. gummis* in the fig, *Bact. juglandis* in the walnut and *B. cubonianus* and *Bact. mori* in the mulberry.—P. D. Caldis.

8820. SĂVULESCU, T., AND C. SANDU. Bacteriosa sfeclei de zahăr în România. [Bacteriosis of sugar beets in Rumania.] Bul. Agric. 6: 3-9. 4 pl. 1925.—The disease studied by the author is shown to be bacterial gummosis and the causal organism identical with the bacterium isolated by Hedgecock and Metcalf.—E. Pop.

8821. WOLLMAN, EUGENE, ET ELISABETH WOLLMAN. Recherches sur le phénomène de d'Herelle. Pluralité et autonomie des bactériophages. [Investigations on the phenomenon of d'Herelle. Plurality and autonomy of the bacteriophage.] Compt. Rend. Soc. Biol. 92: 552-553. 1925.

INFECTIOUS CHLOROSES (MOSAIC, YELLOWS, CURL, ROSETTE, ETC.)

8822. ANONYMOUS. The uba streak disease in Natal. South African Sugar Jour. 9: 665. 1925.—Streak disease has been found in every field of Uba cane examined in Natal and Zululand and also on other cane varieties, and it has long been known in South Africa on maize, on which it tends to be virulent. Its effect on cane seems to be distinctly less harmful than mosaic, but there is little doubt that it diminishes the crop.—Nellie E. Fealy.

8823. ANONYMOUS. Treatment of streak and mosaic diseases. Address by the Director of the Sugar Experiment Station, H. H. Dodds. South African Sugar Jour. 9: 593, 595, 597, 599. 1925.—A general discussion of the effects of streak disease in reducing cane yields and of the value of selection, roguing and the maintenance of disease-free nurseries. Remarks on the use of green manures and on phosphate fertilization are also included.—Nellie E. Fealy.

8824. CARISNER, EUBANKS. Attenuation of the virus of sugar beet curly-top. Phytopathology 15: 745-757. 5 pl. 1925.—In studying the reaction of *Chenopodium murale*, *Rumex crispus*, and *Suaeda moquini* to inoculation with curly-top of sugar beets it was found that, while they were susceptible to the disease, they were comparatively difficult to infect and the virus from diseased plants of these 3 species was not capable of producing the severe form of curly-top in beets. The symptoms are similar to ordinary curly-top but less severe. Infection with this attenuated form does not confer immunity or increased resistance, since plants affected with the attenuated form may easily be infected with the severe form of curly-top. The attenuated virus has been found in leaf-hoppers from their natural breeding grounds, probably due to their having fed on these resistant species.—B. B. Higgins.

8825. DICKSON, B. T. Mosaic of Rhubarb. Rept. Quebec Soc. Protect. Plants 17: 36-37. 1 fig. 1925.—What is evidently a mosaic disease of rhubarb has been under observation since 1922. Mottling of the leaves and dwarfing were the chief characteristics. Artificial inoculation gave negative results.—J. E. Machacek.

8826. DODDS, H. H. Streak diseases in Mauritius. Disease proved similar to Natal. South African Sugar Jour. 9: 583. 1925.—The first case of streak disease elsewhere than in Natal was noticed in Mauritius at Mapou and at the Central Experiment Station at Reduit. Transmission of the disease in secondary cuttings was proved. The variety R. P. 8 seemed to show a high degree of tolerance to the disease. Efforts to transmit streak from infected to healthy maize plants by an undetermined species of leaf hopper failed.—It is now believed that the recently announced supposed mosaic infection on the windward side of Reunion was streak.—Nellie E. Fealy.

8827. DOOLITTLE, S. P., AND F. R. JONES. The mosaic disease in the garden pea and other legumes. *Phytopathology* 15: 763-772. 1 pl. 1925.—Mosaic has occurred commonly on both garden peas (*Pisum sativum*) and sweet peas (*Lathyrus odoratus*) in Wisconsin during the past 2 years. On diseased garden peas the leaves are smaller than normal, with occasionally a tendency to roll up at the edges. Plants infected early may be considerably dwarfed. The symptoms are much more pronounced in mosaic-diseased sweet peas. Cross inoculations show that the disease is easily transferred from garden to sweet pea and *vice versa*. Successful cross inoculations from both species to *Trifolium pratense* were made, and field observations indicate that the latter is probably the host on which the disease overwinters. Attempts to infect garden peas and sweet peas with mosaic from beans and sweet clover were negative. Seed transmission apparently does not occur.—B. B. Higgins.

8828. DUGGAR, B. M., AND JOANNE K. ARMSTRONG. The effect of treating the virus of tobacco mosaic with the juices of various plants. *Ann. Missouri Bot. Gard.* 12: 359-366. 1925.—After several attempts to infect pokeweed (*Phytolacca decandra*) with tobacco mosaic had failed, the effect of the juice of the pokeweed on the tobacco virus was determined experimentally. When viriferous tobacco juice is diluted with pokeweed juice (1-99) and inoculated into healthy tobacco plants the latter remain healthy, while viriferous tobacco juice diluted with water transmits the disease to tobacco. Even when the virus is diluted only 5 times, the pokeweed juice completely inhibits the disease. Juice of Jimson weed in relatively high concentration and the juice of geranium (*Pelargonium* sp.) both produce some inactivation, while plant juices of cotton and squash and juices from Irish potato tubers, sweet potato tubers and apples do not inactivate the virus of tobacco mosaic.—S. M. Zeller.

8829. FAES, H. Les porte-greffes résistant à la chlorose. [Stocks resistant to chlorosis.] *Prog. Agric. et Vitic.* 83: 83-85. 1925.

8830. FAWCETT, G. L. Encrespamiento de las hojas de la remolacha Azucarera. [Leaf curl of the sugar beet.] *Revist. Indust. y Agric. Tucuman* 16: 39-46. 1925.—Sugar beets in northern Argentina are frequently affected with a form of curly top called "encrespamiento." It differs from the typical disease in that there is no necrosis of the phloem elements, cross sections of the roots not showing the dark rings so characteristic of the North American disease. Experiments show the agent of transmission to be the leaf hopper, *Aceratogallia sanguinolenta*.—Author.

8831. GODDARD, E. J., C. J. P. MAGEE, AND H. COLLARD. Bunchy top in bananas. *Queensland Agric. Jour.* 24: 424-429. 1925.—The authors regard this as a virus disease, transmitted, by the dark banana aphid (*Pentalonia nigronervosa*). The sieve tubes in the leaf phloem of diseased plants undergo a peculiar alteration giving rise to characteristic green streaks which serve for the early detection of the disease. An experiment is reported in which the disease was transmitted by the feeding of aphids from diseased plants, the controls all remaining healthy.—W. D. Francis.

8832. JOHNSON, J. Transmission of viruses from apparently healthy potatoes. *Wisc. Agric. Exp. Sta. Res. Bull.* 63: 1-12. 8 pl. 1925.

8833. KOTILA, J. E. Mosaic and potato yields in Michigan. *Michigan Agric. Exp. Sta. Quart. Bull.* 5. 188-189. Fig. 6. 1923.—One hundred hills of healthy Green Mountain potatoes were selected for comparison with 100 hills of the same variety, in the same field, which were of equal size and apparent vigor, but showed distinct mosaic symptoms of the mild type. The average yields of tubers per hill were respectively 2.18 and 1.47 pounds, a reduction of about 32%.—Ernst A. Bessey.

8834. KUNKEL, L. O. Mosaic and related diseases. *Amer. Jour. Botany* 12: 517-521. 1925.—The author believes that the causative agent of these diseases is not inanimate or enzymic in character but is corpuscular and of the nature of living cells, minute but perhaps not ultramicroscopic. That these corpuscles pass through a filter may be due to their plasticity rather than their small size. Much more knowledge is needed as to the facts of susceptibility and immunity in mosaic diseases, the rôle of insects as carriers, and the cytological and histological effects of the diseases.—E. W. Sinnott.

8835. MCKINNEY, HAROLD H. A mosaic disease of winter wheat and winter rye. *U. S. Dept. Agric. Dept. Bull.* 1361. 11 p. *Illus.* 1925.—This disease occurs on wheat in 4 counties

in Illinois and in 2 counties in Indiana, and in winter rye in Illinois and in Virginia. The symptoms are similar to those of corn and sugar cane mosaic. Certain varieties become dwarfed and greatly proliferated, giving rise to a rosette condition. Leaf mottling occurs on a few plants in late autumn but it is not conspicuous until spring. A leaf mottling which is not due to mosaic is described and differentiated.—This mosaic can be transmitted to healthy seedlings by inoculation with tissue and juice from affected plants, though artificial transmission is accomplished with difficulty. Rosette and mosaic are considered to be different manifestations of the same cause. Cell inclusions were found in all plants which developed mosaic and rosette, but none were found in the healthy plants.—The causal agent seems to persist in the soil, and in heavy gumbo soil longer than in sandy soil. The disease is controlled through the use of resistant varieties.—*Author*.

8836. PRUNET, A. La dégénérescence de la pomme de terre. [Degeneration of the potato.] *Prog. Agric. et Vitic.* 78: 9-15, 41-46. 1922.

8837. SALMON, E. S., AND W. M. WARE. Virus diseases and the grafting of the hop. *Gard. Chron.* [London] Ser. III. 77: 320-322. 2 pl. 1925.—Experiments are described in grafting and in arching hop plants as a means of studying the transmission of virus diseases.—*P. L. Ricker*.

8838. SMITH, FLOYD T. The relation of insects to the transmission of raspberry leaf curl. *Jour. Econ. Entom.* 18: 509-513. 1925.—*Aphis rubiphila* Patch was the only insect carrier of raspberry leaf curl among several insects tested. The aphids must feed upon a diseased plant before becoming carriers. The infective agent is not carried over winter within the egg from the fall generation to the spring forms. The infective agent is not inherited by the offspring in viviparous reproduction. Leaf curl was transmitted from black to red raspberries but not from red to black varieties.—*Author*.

8839. STOREY, H. H. The transmission of streak disease of maize by the leafhopper *Balclutha mbila* Naude. *Ann. Appl. Biol.* 12: 422-439. 3 pl. 1925.—In the absence of transmission of streak disease by seed, the wide occurrence of this disease in maize in South Africa is accounted for by infection of the plants at some period after their appearance above ground. A number of insects have been tested as possible vectors, and positive results have been obtained with a jassid, *Balclutha mbila* Naude. Negative results were obtained in trials of *Aphis maidis* Fitch, *Peregrinus maidis* Ashmead, and a number of undetermined jassids and fulgorids. Field observations showed that *Balclutha* was to be found, although infrequently, whenever a field of maize, recently infected with streak disease, was thoroughly searched. It is held therefore to be the agent of spread of the disease in the field.—*Author*.

8840. VANTERPOOL, T. C. The stripe or streak disease of tomato in Quebec. *Rept. Quebec Soc. Protect. Plants* 16: 116-123. 2 pl. 1924.—Streaking of the stem, mottling of leaves, distortion, necrosis, wilting and death are symptoms of this disease. Fruit may show irregular, hard, shiny spots, causing deformation and cracking. Mosaic is associated with the tomato stripe disease which is of the virus type. Lesions are apparently superficial. Disease in the greenhouse is spread by careless contact with plants. A yellow organism was isolated but inoculations gave negative results. Lower temperatures lengthen incubation period.—*J. E. Machacek*.

8841. WALKER, M. N. The relation of certain species of *Physalis* to the overwintering of the mosaic disease of cucumbers. *Phytopathology* 15: 733-744. 2 pl. 1925.—The finding of mosaic-diseased plants of *Physalis pubescens* in the vicinity of badly infected cucumber fields led to cross-inoculations by aphids between these 2 hosts. Cross infection was readily obtained. Infection was also obtained by inoculating *P. pubescens* with aphids from mosaic plants of tobacco, tomato and pokeweed. Cross-infection was successful between cucumber and *P. subglabrata* and *P. heterophylla*, perennial species on which the mosaic disease can overwinter. Field observations also indicate that *Physalis* sp. in the vicinity of cucumber fields may be an important source of mosaic infection.—*B. B. Higgins*.

8842. WHITEHEAD, T. Some experiments on potato leaf-roll transmission in Wales. *Welsh Jour. Agric.* 1: 184-188. 1924.

8843. WILLIAMS, C. B. Sugar cane pests and diseases in Trinidad in 1920. *Bull. Dept. Agric. Trinidad and Tobago*. 193: 115-121. 1921.—Further consideration is given the places

of introduction of mosaic of sugar cane and the control measures used. The more or less pale green, to almost white, markings on the leaves, characteristic of the disease, are more distinct in plants otherwise healthy and on younger leaves, than on older ones. The sugar cane mosaic has so far been found only on corn and a local species of grass. There are indications that there is practically no spread of the disease during dry weather and the disease is more prevalent in hollows than on slopes. Although there is no doubt that insects spread the disease, the frog hopper, corn leaf hopper, a cane leaf hopper, and a cane membracid failed to transmit it. Corn and cane planted in soil from which diseased cane had been removed failed to develop the disease. There are indications that in field infection the growing leaves become infected first. The stalk may be cut off close to the ground, leaving the underground parts still healthy so that new shoots are formed free from the disease.—*Florence A. McCormick.*

8844. WILLIAMS, C. B. The mosaic disease of sugar cane in Trinidad. Bull. Dept. Agric. Trinidad and Tobago 19: 30-37. 1920.—A general discussion of mosaic disease of sugar cane, including places where found, a description of the disease and the financial loss due to it, is given. There follows a history of its appearance in Trinidad, and eradication and control measures, such as inspection and roguing, are recommended.—*Florence A. McCormick.*

8845. ZUNDEL, G. L. Why raspberries "run out." West. Fruit 7: 7. 1925.—Four "running-out" diseases, namely mosaic, leaf curl, rosette and blue stem or wilt, are mentioned and a brief note is given of their symptoms, spread and control.—*Richard Wellington.*

DISEASES CAUSED BY ANIMAL PARASITES (INSECTS NEMAS PROTOZOANS)

8846. ANONYMOUS. Pests in imported bulbs. New Zealand Jour. Agric. 31: 312-313. 1925.

8847. BAILEY, I. W. The "spruce budworm" biocenose I. Frost rings as indicators of the chronology of specific biological events. Bot. Gaz. 80: 93-101. 3 pl. 1925.—In defoliated trees, the writer found the frost rings to be of value in determining the dates of particular growth layers. The frost rings in *Abies balsamea* were found to be limited to 6-8 innermost growth layers. Contemporaneous frost rings were found in many minor dicot. trees, which it is suggested will make unnecessary the cutting of valuable trees to obtain data on frost injury. In this study the frost rings were found to afford "a reliable means of cross correlating homologous growth layers in different trees and therefore of accurately dating specific growth layers in fir balsams defoliated by the budworm."—*B. W. Wells.*

8848. BAUDYS, ED. Čtvrtý příspěvek k zoocéidologickému prozkoumání Moravy a Slezska. [Researches on the zoocécidia of Moravia and Silesia. 4th communication.] Práce z Fytopathologické Sekce Mor. Zem. Výzkum. Ústavu Zemědělského v Brně No. 39. 1-87. 16 fig. 1925.

8849. BODENHEIMER, F. S. The olive fly (*Dacus oleae* Rossi) in Palestine. Zionist Organization Inst. Agric. and Nat. Hist. Agric. Exp. Sta. Circ. 6. (In Hebrew with English summary.) 16 p., 3 fig. 1925.—The olive fly is a common pest in all parts of Palestine, and is an important factor in the poor oil crops. It produces 6 generations in the coastal region, and 5 in the mountains. Of the olive varieties indigenous to Palestine, 8 out of 11 have been found to be attacked, and the remaining 3 are likely to be found so when more thoroughly investigated. The biological method of control has not proved very successful owing to the fact that 2-3 generations of the olive fly appear in September and later, whereas the parasites reach their maximum earlier in the summer. A spraying schedule is given.—*From author's summary.*

8850. DUPORTE, E. MELVILLE. A preliminary report on some endophytic protozoa. Rept. Quebec Soc. Protect. Plants 16: 94-96. 1924.—Presence of flagellates and amoebae was demonstrated in twelve species of lactiferous plants in the locality. No outward evidence of the presence of the flagellates was seen. The flagellates overwinter as resting cells in the stems of shrubs or herbaceous perennials. There seems to be a rhythmic adaptation between the endophytic protozoa and their hosts. Seed transmission occurred in *Asclepias syriaca* and *Convolvulus sepium*.—*J. E. Machacek.*

8851. FAURE, J. Les insectes des plantes potagères. Procédés de lutte. [Insect pests of kitchen herbs. Means of control.] 48 p., 10 fig. Librairie Agric. Maison Rustique: Paris, [1925?].

8852. FRANCHINI, G. Sur les protozoaires des plantes. [Plant protozoa.] Ann. de l'Institut Pasteur 37: 879-885. 1923.

8853. FULTON, B. B. Insect injuries in relation to apple grading. New York [Geneva] Agric. Exp. Sta. Bull. 475. 42 p. 4 pl. (3 col.), 16 fig. 1920.—The species of insects that attack apple fruits are described and grouped according to the character of the injuries they produce. A key for the identification of insect injuries to mature apples is included. Brief descriptions are given of other defects of apples that might be confused with insect injuries, namely, hail injury, frost injury, spray injury, sunburn, scab [*Venturia inaequalis*], and bitter pit. Methods for combating the individual insects are indicated.—F. C. Stewart.

8854. KLIKA, J. Histologické poznámky k některým hálkám. Příspěvek k poznání hálek. [The histology of certain zoocecidia.] Věstník Královské české Společnosti Nauk 2: 13. 1 fig. 1923.—The anatomical structure of the galls produced by punctures of *Eriophyes nalepaj* Fock on leaves of *Alnus glutinosa* is an example of cataplasmatic hyperplasia. The parasite nourishes itself from substances accumulated in the epidermal cells and the trichomes.—The galls caused by *Pemphigus bursarius* on *Populus nigra* show less complicated conditions.—(From French summary.)

8855. PUSA, AGRICULTURAL RESEARCH INSTITUTE. Lists of Publications on Indian Entomology. 1923. (Compiled by the Imperial Entomologist.) Agric. Res. Inst. [Pusa] Bull. 155. 1-59. 1924.

8856. RENSCH, B. Ein Frage der Nematodenbekämpfung. [The control of sugar-beet nematodes.] Zuckerrübenbau 7: 24-32. 1925.—A general discussion of host relationships, physiological specialization, environmental factors, nature of resistance, and control by chemicals in reference to the sugar beet nematode, *Heterodera Schachtii*.—B. Nebel.

8857. SEVERIN, HENRY H. P. Percentage of curly leaf infection in beet leaf-hopper (*Eutettix tenella* Baker) and winter host plants under field conditions. Jour. Econ. Entomol. 18: 733-737. 1925.

8858. SWEETMAN, HARVEY L. The life history of *Diabrotica vittata* Fabr. in Iowa (Chrysomelidae, Coleoptera). Jour. Econ. Entomol. 18: 795-807. 1925.

8859. WOIT, MAGDA. Über Wundreaction an Blättern und den anatomischen Bau der Blattminen. [Wound reaction of leaves and the anatomy of leafmines.] Mitteil. Deutsch. Dendrol. Ges. 35: 163-187. 22 fig. 1925.—A considerable number of leaves from different species that were damaged by biting insects or other animals were observed. Many cells in full grown leaves are stimulated to division and new growth. Formation of callus is often induced in the palisade and sponge parenchyma, less often in the epidermis. Cells of the collenchyma, conductive tissue, lithocysts and hairs often are active in the wound reaction. Some cells are stimulated to growth, while others become lignified. All reactions occur more readily near the fibro-vascular bundles. Evergreen trees and those with succulent leaves usually produce flat-celled wound cork, whereas thin leaves of annual plants produce callus-like wound cork. Sometimes retardation of development occurs in proximity to wounds. Transpiration is also important in that, in a moist place callus is formed, but a freely exposed wound usually develops wound cork. Leaf-mining larvae do not excrete products that act as stimulants on the leaves.—J. C. Th. Uphof.

DISEASES CAUSED BY PHANEROGAMIC PARASITES

8860. HERBERT, D. A. Root Parasitism of western Australian Santalaceae. Jour. Roy. Soc. Western Australia 11: 127-149. 1925.—The following species are shown to be parasitic on roots of various hosts: *Fusanus spicatus*, *F. acuminatus*, *Leptomeria preissiana*, *L. spinosa*, *Choretum lateriflorum*, *Exocarpus aphylla* and *E. spartea*. The structure of the haustoria and methods of attachment are described.—W. M. Carne.

8861. MCLUCKIE, J. Studies in parasitism. 1. A contribution to the physiology of the genus *Cassytha*. Proc. Linn. Soc. New South Wales 49: 55-78. 1924.—The writer deals with the general features of habit, habitat and hosts of the species of *Cassytha*. A detailed study of the development of the haustorium is made, and the relation of the haustorial tissues to those of the host is described.—(From Australian Science Abstracts.)

8862. PATVARDHAN, G. B. Some hosts of lucerne dodder. (*Cuscuta chinensis*.) Poona

Agric. Coll. Mag. 17: 152-153. 1925.—Some 12 hosts of dodder observed by the author in the Poona District are listed and discussed.—*Frederick V. Rand*

8863. WENDE, WILHELM. Vorkommen der Mistel auf Weisdorn. [Occurrence of mistle-toe on hawthorn.] Mitteil. Deutsch. Dendrol. Ges. 35: 343. 1925.

8864. ZENDER, J. Sur l'état rhizopodial des haustoriums du *Cuscuta europaea*. [The rhizopodial state of the haustorium in *Cuscuta europaea*.] Compt. Rend. Soc. Phys. d'Hist. Nat. Genève 41: 43-44. 1924.

NON-PARASITIC DISEASES AND TERATOLOGY, INCLUDING DISORDERS OF UNKNOWN CAUSE

8865. ANONYMOUS. Ecuador: Cacao disease. Bull. Pan-Amer. Union 55: 393. 1922.—A commission of cacao planters observed a parasitic disease causing great damage to the cacao trees in the Balboa plantations. The disease is known locally as *Escoba de Brujas*, or witches' broom.—*M. N. Levine*.

8866. ANONYMOUS. La maladie des ormes. [The dying of elm trees.] Bull. Soc. Centrale Forest. Belgique 31: 603-607. 1924.—Since 1919 a large number of elm trees have been dying from an unknown cause. Recommendations for attempted control are given.—*H. T. Gisborne*.

8867. A., A. La maladie des ormes. [The elm tree disease.] Bull. Soc. Centrale Forest. Belgique 32: 176-181. 1925.—Analysis of the work of M. A. Brussoff, who claims to have isolated a micro-organism from dying elms, which, when injected into healthy specimens, produced the disease that is killing so many elm trees in Belgium.—*H. T. Gisborne*.

8868. ADAM, D. B., AND J. E. HARRISON. Experiments in cool storage of apples. Jour. Dept. Agric. Victoria 23: 226-234. 1925.—There is only slight evidence of any advantage of oiled wrappers in the prevention of scald in Rome Beauty apples, and none in the case of Jonathans. Jonathan scalds less at 37° than at 32°F., but Rome Beauty apparently scalds worse at the higher temperature. Scald in Jonathans is, therefore, thought to be a physical injury, whereas it is apparently a chemical injury in Rome Beauty. Late picking tends to prevent scald in both varieties.—*Wm. E. Lawrence*.

8869. ALCOCK, N. L., AND I. MAXWELL. Successional diseases on willow. Trans. Royal Scottish Arboric. Soc. 39: 34-37. 2 pl. 1925.

8870. AULER HANS. Über chemische und anaerobe Tumorbildung bei Pflanzen. [Chemical and anaerobic tumor formation in plants.] Zeitschr. Krebsf. 22: 393-403. 1925.—Sterilized carrot discs treated respectively with 1-1000 solutions of formic acid, formamide and acetamide, and properly incubated, developed in the meristematic region small pale-yellow papillae with an uneven surface and a normal consistency. In the course of a few weeks some of the swellings attained the size of garden peas. The best overgrowths were produced by the formamide and the poorest by acetamide. The checks had no swellings whatever on the upper surface, but a slight indication of proliferation on the surface next to the filter paper, which showed a slight acid reaction. Good sized papillae developed also on untreated discs which had been scratched and sealed up in air tight Petri dishes. These growths were no different histologically from those induced by bacteria or by the above mentioned chemicals, and evidently were caused by substances which occurred in the cells under the prevailing conditions. It is probable that enzyme products and indeed fatty acids or NH_2 derivatives were the cause, the first having arisen on account of the deficient oxygen supply.—*M. N. Levine*.

8871. BARBAINI, M. Sopra l'annerimento dei semi di una varietà di pisello adoperata nell'industria delle conserve. [Blackening of the seed of a canning variety of peas.] Atti. Ist. Bot. Univ. Pavia. Ser. III, 2: 341-346. 1 pl. 1925.—A microchemical examination of the seed of *Pisum sativum* used in canning, revealed the fact that darkening of certain seed was due to the presence of tannin which was absent in seed that did not turn black. It was further found that such seed originated in plants with slight pigmentation in the flower and seed coat. Rouging and selection of seed is advised.—*P. D. Caldis*.

8872. BIRD, M. Soil hygiene and its relation to "disease" of cane. Jour. Bd. Agric. British Guiana 18: 256-261. 1925.—(See also Bot. Absts. 15, Entry 5350.)

8873. BITTMANN, O. Ein Beitrag zur künstlichen Erzeugung atypischer Zellenprolifera-

tion bei den Pflanzen. [A contribution to the artificial production of atypical cell proliferations in plants.] Zeitschr. Krebsf. 22: 291-296. 1925.—Atypical proliferations were produced on parsley and cabbage, but not on carrots and celery, when treated with a 1% solution of lactic acid under controlled conditions. On the basis of cross-inoculations the author concludes that the tumors are due to chemical causation and their further growth is stimulated at the expense of the neighboring tissue. He considers the atypical proliferations on plants in general to be the result of chemical and chemo-mechanical (including pathogenic) influences, and that these proliferations are virtually malignant growths and not inflammatory pseudo-tumors.—*M. N. Levine.*

8875. BLUMENTHAL, FERDINAND, AND PAULA MEYER. Über durch Acidum lacticum erzeugte Tumoren auf Mohrrübenscheiben. [Tumors produced by lactic acid on carrot disks.] Zeitschr. Krebsf. 21: 250-252. 1924.—Circular sections of carrots were inoculated with a 1% solution of lactic acid by scratching the surface with a platinum needle. In 1 case several firm nodules were formed which were subjected to histological study. A similar definite tumor growth was later obtained in a replicated series. Microscopic examination revealed the same morbid anatomy as in tumors produced by *Bact. tumefaciens*. There was also little difference in the callus-formation in the 2 treatments. The writers point out the importance of the production of tumor growths in plants without the aid of an organism, and their results confirm the opinion of E. F. Smith and his associates that the irritant causing the tumor growth is a metabolic product of *Bact. tumefaciens*.—*M. N. Levine.*

8876. BRODER, L. Ueber einige Ascidien und andere teratologische Formen bei der Gesneriaceen. [Ascidia and other teratological forms in the Gesneriaceae.] Bull. Acad. Sci. Cracovie 1-2B: 117-121. 1 pl. 1925.

8877. CHAPPAZ, G. Le court-noué. [Short node (of grapes).] Prog. Agric. et Vitic. 81: 469-474. 1924.

8878. COTTRELL-DORMER, W. Leaf scald [of sugar cane]. Queensland Agric. Jour 24: 336. 1925.

8879. DLABKA, JOHS. Warum bringen Cyclamen so häufig kleine Blumen? [Why do cyclamens often produce small flowers?] Gartenwelt 29: 4. 1925.—Believed to be an effect of improper fertilization.—*J. C. Th. Uphof.*

8880. DOPIERALSKI, WILLY. Ein Grund des Tannensterbens im Ruhrgebiet. [A cause of dying of Abies in the Ruhr region.] Möllers Deutsch. Gärtnerzeitg. 40: 366. 1925.

8881. ESTEVE, MIGUEL A. Las enfermedades del castaño. [Diseases of the chestnut.] España Forest. 5: 11-15, 20-26. 1919.—This is an account of the "ink" disease of *Castanea vesca*, which was first discovered in Portugal in 1838 and has since spread throughout southern Europe, threatening to exterminate the species. It has been studied by many investigators in Portugal, Spain, France, and Italy, and has been attributed to various causes, especially mycorrhizas and several kinds of fungi. Especial attention is given to the work of Briosi and Farneti, who identified the cause as a fungus, *Melanconis modonia*, and of Ducomet, which seems to indicate that while *Melanconis* kills trees, the ink disease frequently develops in the absence of the fungus.—The Japanese chestnut has proved resistant to the disease, and has been planted to some extent in Spain, where it has yielded mine timbers at 12 years of age. The varieties *Tamba-guri* and *Bu-guri* yield the largest and best nuts. In Japan they are commonly grafted on the *Shiba-guri* variety, which yields the best timber.—Some success in combating the disease has been had by uncovering the roots for $\frac{1}{2}$ -2 m. from the tree, leaving them exposed for 15-20 days, then dusting with lime and covering with earth mixed with lime and Thomas meal. The use of iron or copper sulphate solutions has also been recommended.—*W. N. Sparhawk.*

8882. FIRO, J. WILLIAM. Pecan rosette. Georgia State Coll. Agric. Bull. 258. 12 p. 4 fig. 1922.—In 1913 observations were begun on a block of pecan (*Hicoria pecan*) trees in Jefferson County, Georgia. Of the 690 trees in the block, 357 were rosetted. During a period of 7 years tests were made of all remedies suggested for this trouble, including bluestone, lime, dynamiting, fertilizers, etc.; none gave any control. In 1916 the use of a mulch of straw around the trees was conceived and used. By 1919 the affected trees under mulch treatment had all recovered, while those in the check remained unchanged. The theory advanced as to

the cause of rosette is not borne out by subsequent work of others. The delayed publication of this bulletin was due to the war. There is a supplementary statement bringing this publication up to date and quoting U. S. Department of Agriculture Bull. 1038.—*T. H. McHutton.*

8883. GARDNER, MAX W. Hyperplastic crushing of the tracheal tubes in mosaic tomato stems. *Phytopathology* 15: 759-762. 2 pl. 1925.—In tomato plants affected with the severe streak or winter blight type of mosaic, necrotic areas may occur in any tissues of the stem or leaf. These are usually accompanied by hyperplasia of the adjacent cells. The hyperplasia is most evident in younger parts of the stem and near the more responsive tissues. When a necrotic area develops near the cambium the growth of hyperplastic tissue is often sufficient to crush the tracheae and interfere with the ascent of water.—*B. B. Higgins.*

8884. GAUCH, A., ET J. DURAND. Le court-noué. [Short node (of grapes).] *Prog. Agric. et Vitic.* 81: 302-306. 323-327. 1924.

8885. HARVEY, R. B. Conditions for heat canker and sunscald in plants. *Jour. Forest.* 23: 392-394. 1925.

8886. HÖSTERMANN, UND NOACK. Über das Ulmensterben am Untern Rhein. [Dying of elms on the lower Rhine.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 287-289. 1925.—An elm disease similar to one known in Holland and attributed to drouth is described.—*J. C. Th. Uphof.*

8887. KAMAT, M. N. Gummosis of citrus trees. *Poona Agric. Coll. Mag.* 17: 86-87. 1925.—Gummosis has been reported from the Ahmednagar district and recently from the vicinity of Poona. Preliminary control experiments and tentative recommendations are given.—*Frederick V. Rand.*

8888. KOTILA, J. E. Fall and winter care of potatoes. *Michigan Agric. Exp. Sta. Quart. Bull.* 6. 8-11. 4 fig. 1923.—Attention is called to certain troubles of stored potatoes: Chilling injury, manifesting itself in discolored vascular bundles and darkened flesh; breakdown, caused by poor ventilation, showing itself as pits or sunken spots in the surface; black-heart, another form of breakdown, due to improper ventilation and overheating.—*Ernst A. Bessey.*

8889. KUYPER, J. Het optreden van Sereh in maaiet-en bibittuinen in 1925. [Appearance of the Sereh disease in sugar cane propagating gardens in 1925.] *Arch. Suikerindus. Nederland.-Indië, Meded. Proefsta. Java-Suikerindust.* 1925¹¹: 375-390. 1925.

8890. MARBOTH, R. Investigations into the causes of the chlorotic condition of fruit trees in the Wellington District. *Univ. South Africa. Dept. Agric. Sci. Bull.* 29. 21 p. 6 pl. 1924.—About 5,000 trees in the region are affected, the roots alone indicating a diseased condition. There appear to be 2 kinds of disease causing chlorosis, one caused by black alkali, the other probably by mechanical injury in cultivation.—*E. N. Munnis.*

8891. MASSEY, A. B. Antagonism of the walnuts (*Juglans nigra* L. and *J. cinerea* L.) in certain plant associations. *Phytopathology* 15: 773-884. 5 fig. 1925.—The author reports several observations of antagonistic action of walnut trees on certain crop plants, notably alfalfa and tomatoes, and only slightly less so on potatoes. Alfalfa plants were all killed in an area more than twice the diameter of the limb expanse of a tree, and exactly coinciding with the root expanse. The plants wilted and died, the roots dying first. Tomatoes planted near a black walnut tree behaved similarly. They grew normally in soil taken from this area which was free from walnut roots; but when bark from walnut roots was mixed with it they grew very poorly. When walnut root bark was added to water cultures of tomato plants, the tomatoes were killed within 48 hours. The evidence indicates that walnut roots excrete a substance, probably juglone, which is very toxic to certain plants.—*B. B. Higgins.*

8892. NEWHALL, A. G. The tip burn of head lettuce. *Market Growers' Jour.* 36: 18-19. 1925.—This disease is caused by excessive withdrawal of water from rapidly growing leaves, particularly the margins of the inner leaves where the sap concentration is lowest. The temperature of the leaves of head lettuce in bright sunshine may be 105-115°F. when the air temperature is 85-90°F. Remedies such as the use of resistant varieties, and control of fertilization and cultivation to avoid too rapid growth are suggested.—*H. C. Thompson.*

8893. RAVAS, L. Le court-noué. [Short node (of grapes).] *Prog. Agric. et Vitic.* 81: 424-426, 447-452. 1924.—This disease of the grape is attributed to a water-logged soil, supplemented by an invasion of the smaller roots by a fungus.—*E. L. Proebsting.*

8894. RAVAS, L. *Le folletage*. *Prog. Agric. et Vitic.* 76: 29-35. 1921.—The symptoms of this trouble, which is a form of abnormal water relations of the grape vine, are described, and the relation of root-stock and of soil type to the disease discussed.—*E. L. Proebsting*.

8895. RAVAS, L., ET G. VERGE. *Le rougeau de la vigne*. [Rougeau of the vine.] *Prog. Agric. et Vitic.* 81: 11-17, 35-38, 86-89, 110-113, 135-141. 1 *pl.*, 11 *fig.* 1924.—(See also Bot. Absts. 13, Entry 5306.)

8896. SCHAFFNER, JOHN H. *Effect of lightning on trunk of Platanus occidentalis*. *Bot. Gaz.* 80: 226-227. 1 *fig.* 1925.—Mention is made of a tree which put forth about 200 twigs on the trunk following a lightning stroke. They appeared both on the lightning paths and on uninjured parts.—*B. W. Wells*.

8897. SCHWARZ, ERNST. *Tumorzellen und Tumoren*. [Tumor cells and tumors.] *Zeitschr. Krebsf.* 19: 171-180. 1922.—In this lecture delivered at the general meeting of the German Central Committee for the Investigation and Combatting of Cancer, May 12, 1922, a comprehensive exposition of the nature, origin, mechanism, biology, and genetics of tumor cells and tumors was given.—*M. N. Levine*.

8898. SIBILIA, C. *Prolungamento vegetativo d'infiorescenze carpellifere di Cedrus atlantica Manetti*. [Vegetative prolongation of the carpellate inflorescence of *Cedrus atlantica*.] *L'Alpe*: 12: 9-10. 1 *fig.* 1925.—This is a case of teratology probably of non-parasitic origin.—*R. Ciferri*.

8899. SOURSAC, L. *Le rougeau et la sécheresse*. [Rougeau and drouth.] *Prog. Agric. et Vitic.* 82: 116-118. 1924.

8900. TIEDJENS, VICTOR A. *Yellow pickle in greenhouse cucumbers*. *Massachusetts Agric. Exp. Sta. Bull.* 225. 1-8. 1925.—Yellow pickle is a non-parasitic disease of greenhouse cucumbers, the symptoms of which are small, yellow, and deformed fruits. It is considered to be due to the premature ripening of young fruit, at a time when the plant is already carrying a heavy load of fruit. It can sometimes be attributed to lack of pollination. The disease is likely to occur in poorly drained soil. To avoid yellow pickle, growth of the plant must be continuous and rapid. The conditions which are said to prevent the disease include uniform night temperatures, moderate watering, light applications of nitrogenous fertilizer, prompt removal of nubbins or deformed cucumbers, and daily pruning.—*William Doran*.

8901. WIEBER, A. *Über Einwirkungen von Fabrikexhalationen auf die Holzgewächse*. [The effects of factory fumes on woody plants.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 102-111. 2 *pl.* 1925.

DISEASE CONTROL (SEED TREATMENT, SOIL DISINFECTION, FUNGICIDES, INSECTICIDES, ETC.)

8902. ANONYMOUS. *How to control plant disease by spraying and dusting*. *Plant Protect. Sec. Min. Agric. Egypt. Mycol. Div. Leaflet* 2. 1-7. 2 *fig.* 1923.

8903. ANONYMOUS. *Le verdissage des semences*. [Treatment of wheat seed with cooper acetate.] *Prog. Agric. et Vitic.* 82: 498-500. 1924.

8904. ANONYMOUS. *Machines for spraying and dusting diseased crops*. *Plant Protect. Sec. Min. Agric. Egypt. Mycol. Div. Leaflet* 3. 1-4. 8 *pl.* 1923.

8905. ANONYMOUS. *New wood preservative introduced from Germany*. *Sci. Amer.* 132: 336. 1925.—This describes Wolman salts and their use as a wood preservative.—*Chas. H. Otis*.

8906. ANONYMOUS. *Nicaragua: Reported cure for banana disease*. *Bull. Pan-Amer. Union* 58: 299. 1924.

8907. ANONYMOUS. *Rohchloramin als Desinfektionsmittel im Sinne des Reichsviehseuchengesetzes*. [Raw aminchlorate as a disinfectant in the range of the law for animal pests.] *Zuckerrübenbau* 7: 63. 1925.

8908. ANONYMOUS. *Rubber—its friends and foes*. *Anatomical structure of Hevea leaf in relation to spraying*. *Tropical Life.* 21: 180. 1925.—The following observation is quoted from *The Planter of Malaya*. Managers of rubber plantations have found that Bordeaux mixture applied as a spray to the upper surfaces of the leaves of Hevea sticks well but does not adhere to the under surfaces. Microscopic examination of the leaf structure indicates that

this is not due to a waxy surface but to the presence of very fine ridges. Air in the microscopic depressions between the ridges repels the spray material and causes it to run off or collect along the midribs and veins the epidermal surfaces of which are smoother. *Phytophthora* attacks the under surface of the leaves more than the upper but fortunately shows a preference also for the midribs and veins, where the Bordeaux sticks best.—*H. N. Vinnell*.

8909. ANONYMOUS. **Seed steeping and seed sprinkling.** Plant Protect. Sec. Min. Agric. Egypt Mycol. Div. Leaflet 9. 1-4. 2 pl. 1925.—Formalin 0.25%, copper sulphate 2%, and the hot water treatment are recommended as seed treatment for certain diseases. Their preparation and method of application are described and illustrated.—*T. Fahmy*.

8910. ANDREWS, J. W. **Borax as a preventative of decay.** Florida Grower. 32¹⁵: 7. 1925.—Commercial tests have demonstrated that borax and boracic acid have a marked control on blue mold, *Phomopsis* and *Diplodia* rot affecting citrus fruits. Details of the treatments are given.—*J. C. Th. Uphof*.

8911. ARMET, H. **Emploi du gaz carbonique et des bouillies colloïdales dans les sulfatages.** [The use of CO₂ and colloidal mixtures in sulphate sprays.] Prog. Agric. et Vitic. 81: 592-597. 1924.—The use of compressed CO₂ with Bordeaux or Burgundy mixtures is said to aid in obtaining very finely divided drops of spray, and to reduce leaf burning. The addition of a colloid (silica gel recommended) protects the copper against rapid settling.—*E. L. Proebsting*.

8912. BAILEY, D. L., AND F. J. GREANEY. **Preliminary experiments on the control of leaf and stem rusts of wheat by sulphur dust.** Sci. Agric. 6: 113-117. 1925.—The results obtained indicate that frequent applications of sulphur dust constitute an effective means of controlling leaf and stem rusts of wheat, and that the cost of material is not prohibitive.—*T. G. Major*.

8913. BENNETT, C. W. **Apple scab and its control.** Michigan Agric. Exp. Sta. Quart. Bull. 5: 130-134. 2 fig. 1923.—A brief life history of the apple scab fungus is given followed by an account of the dates of ejection of the ascospores in 1922. The dependence of spore discharge on rainfall and the relation of infection to the blossoming stage is pointed out. The 1st infection occurred April 24, and the spots then produced were liberating spores by the time of the rains in mid-May. The growers who applied a "pre-pink" spray prevented this first infection but those that waited for the "pink" stage had considerable infection.—*Ernst A. Bessey*.

8914. BENNETT, C. W. **Disease control in black raspberries.** Michigan Agric. Exp. Sta. Quart. Bull. 6: 12-14. 1 fig. 1923.—Diseases are becoming more frequent every year as raspberry culture becomes more intensive. The most successful method of combating the troubles is to grow disease-free plants for the new plantings. These cannot be obtained from nurseries throughout the country, but may be produced by tip-propagating from vigorous plants having healthy foliage. The use of dormant sprays, roguing and clean culture are necessary to preserve healthy plantations.—*Ernst A. Bessey*.

8915. BOURCART, E. **Insecticides, fungicides, and weed killers.** [Translated from the French and adapted to British standards and practice by Thomas R. Burton.] 2nd English ed. xii + 431 p., 13 fig. Scott, Greenwood, and Son: London, 1925.—This edition differs from the 1st English edition in having the entomological glossary incorporated in the main body of the text chiefly in the form of foot notes. In the introduction the author discusses the general principles of insect and plant disease control and comments on recent developments and the awakened interest in this subject in France. In the 24 chapters which follow, upwards of 200 substances that have been used alone or as ingredients of insecticides, fungicides, and weed killers are discussed under the chemical groups to which they belong. Sulphur, copper, and carbon compounds are given special attention. The translator has retained the French word "bouillie" throughout the text in preference to the English equivalent "mixture." Citations in this book are by author without reference to date or place of publication.—*A. Hartzell*.

8916. BUTLER, O. **Bordeaux mixture II, Stimulatory action.** New Hampshire Agric. Exp. Sta. Tech. Bull. 21. 3-50. 1922.—A review of literature shows that Bordeaux may affect the color of leaves, anatomical structure, transpiration rate, formation of carbohydrates, length of growing period, acidity, and yield in a number of plants including potatoes, grapes,

beans, tomatoes, etc. The effect may be due to copper, lime, iron, color of the mixture, shade, or electrical stimulus. The author reports experiments in which it was shown that a 1% Bordeaux mixture containing equal weights of copper and calcium oxide, and a milk of lime containing 1.32% of calcium hydroxide caused tomatoes, beans, and radishes to lose weight and to transpire more per gm. of dry matter formed than unsprayed plants. This occurred irrespective of light intensity or soil fertility but the effect was much less marked in plants growing in too dry a soil. A 1% Bordeaux containing approximately $\frac{1}{3}$ as much lime as copper did not have this effect. Transpiration on the basis of unit leaf-area in sunflower, potato, tomato, castor bean, horticultural bean, and *Coleus* was increased at night but not on the average for the 24-hour day. The conclusion is drawn that the effects of the mixtures are due to shade and that the magnitude of the effect depends upon the opaqueness to the spectrum as a whole. Higher transpiration during the night is believed to be due to the effect of the mixture in reducing loss of heat by radiation resulting in a relatively high leaf temperature at night.—*G. F. Potter.*

8917. BUTLER, O. Control of apple scab. New Hampshire Agric. Exp. Sta. Circ. 25. 2-8. 1925.—Results of field spraying tests are given in which it is shown that, under conditions of severe infestation, scab cannot be controlled satisfactorily on susceptible varieties, such as the McIntosh, unless Bordeaux mixture is used in 2 applications prior to the calyx spray. Where the infestation is not severe lime-sulphur is a satisfactory fungicide for use throughout the season. Bordeaux mixture 2-2-50 was found practically as effective as mixtures containing more copper sulphate but mixtures in which the ratio of copper sulphate to lime was as low as 1-5 were found ineffective.—*G. F. Potter.*

8918. BUTLER, O. R. Effect of spray pressure and number of nozzles on late blight of potatoes. New Hampshire Agric. Exp. Sta. Circ. 24. 1-4. 4 fig. 1925.—Experimental data are given showing that a fine spray from nozzles in which the aperture of the cap is 0.055 inch is more effective in control of late blight of the potato than is the coarser spray from nozzles in which the aperture of the cap is 0.067 in. A pressure of 180 pounds to the sq. inch was found to be twice as effective in reducing infection as is a pressure of 90 pounds. In machines in which only 2 nozzles per row are used, it is recommended that the field be sprayed twice at each application.—*G. F. Potter.*

8919. BUTLER, O. R. Experiments on the field control of snapdragon rust together with a description of a method for the control of the disease in greenhouses. New Hampshire Agric. Exp. Sta. Tech. Bull. 22. 1-14. 2 fig. 1923.—The spores of the snapdragon rust germinate in water and in moist air. Copper fungicides will not control the rust since it is impossible to cover the plant entirely with spray. Sulphur and sulphur sprays are more effective but require a comparatively high temperature to kill the spores. Finely divided sulphur dusted thoroughly over the plant gave best results, but is effective only when the temperature during a majority of the days of the week is above 72°F. for at least 11-12 hours. The addition of soot to the sulphur to increase the temperature did not add to its fungicidal value. Under glass the rust may be controlled by dusting with sulphur when the fungous fruits, maintaining a temperature of 72°F. for 11-12 hours daily until fruiting ceases. Care must be taken in watering so as not to wash the sulphur off the plants.—*J. R. Hepler.*

8920. CAMPBELL, J. A. Stationary spraying plants for the orchard. New Zealand Jour. Agric. 31: 279-285. 1925.—Several stationary outfits are in use and give very satisfactory service. Growers are cautioned about purchasing mobile outfits.—*N. J. Giddings.*

8921. CHAPMAN, R. N., AND A. H. JOHNSON. Possibilities and limitations of chloropicrin as a fumigant for cereal products. Jour. Agric. Res. 31: 745-760. 5 fig. 1925.

8922. CHAUZIT, J. Maladies de la pomme de terre. Moyens de les combattre. [Means of combating potato diseases.] Prog. Agric. et Vitic. 80: 63-71, 89-95, 115-118, 136-141. 1923.

8923. [ЧУМАКОВА, Е. Е.] Чумакова, Е. Е. К вопросу о способах борьбы с рассадочным грибом. [Measures of control of seedling fungus.] Болезни Растений, Вест. Отд. Фитоп. Гл Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 105-108. 1925.—Experiments were carried on for control of the fungus, *Monilopezis Aderholdii* Ruhl., on cabbage seedlings. They showed that while *Germisen* and *Uspulun*

retard the amount of the disease, the most effective methods of control are by treating soil with either hot water or with tulol, 15 cc. per 25 cm., results being similar to those obtained by P. Kyropoulos. It also appears that even the fungicides that did not give satisfactory control of the disease had a stimulating effect upon the rate and energy of the seed germination.—*C. D. Sherbakoff.*

8924. COONS, G. H. Copper dust successful against stinking smut. Michigan Agric. Exp. Sta. Quart. Bull. 6: 3-8. 1 fig. 1923.—Experiments in 1923 with copper dusts for the prevention of stinking smut (*Tilletia levis*) of wheat confirm the favorable results obtained from previous seasons' experiments. Untreated seed gave 26% stinking smut; that treated with copper carbonate dust, 2 ounces per bushel of grain, gave 1%; and that treated with copper carbonate and lime dust, 2 ounces per bu. gave 2.5% smut. The "dry" formaldehyde method resulted in 3% smut while both the wet methods (the "soak and skim," and the "sprinkle" methods) gave complete control.—*Ernst A. Bessey.*

8925. COONS, G. H. Copper-dust treatment for stinking smut. Michigan Agric. Exp. Sta. Quart. Bull. 5: 8-11. 6 fig. 1922.—Stinking smut destroys about 5% of Michigan's wheat crop annually. The formaldehyde treatment, though effective, is disagreeable and is not used as extensively as it should be. Dusting with copper salts, first reported in Australia, was tried out in Michigan on very heavily smutted seed grain. The untreated seed gave 51% of smutted plants, that treated with copper carbonate, 2 ounces per bushel of grain, gave 1.4% smutted plants, while formaldehyde gave complete control. Copper sulphate dust with lime resulted in less control than copper carbonate.—*Ernst A. Bessey.*

8926. CULVER, G. E. Bordeaux used with profit on potatoes. Michigan Agric. Exp. Sta. Quart. Bull. 4: 134-135. 1922.—Farm records were kept on 22 farms in various parts of the state. Where power sprayers were used the average yield of potatoes was 207 bu. per acre, with knapsack sprayers 146 bu. per acre, and in unsprayed fields (except arsenical sprays for insects) 112 bushels.—*Ernst A. Bessey.*

8927. DE ONG, E. R. A summary of the answers received to questions on the mechanics of spraying. Jour. Econ. Entomol. 18: 722-726. 1925.—An analysis of 82 answers to a questionnaire on spray mechanics is presented in tabular form. The replies covering almost every state in the Union and coming principally from official entomologists, should indicate the trend of opinion on the important questions of pressure, rate of discharge, and size of aperture in the disc.—*Author.*

8928. DICKSON, B. T. Oat smut control experiments in 1923. Rept. Quebec Soc. Protect. Plants. 16: 77-79. 1924.—Formalin sprinkle, copper sulphate dip, copper carbonate dust and copper sulphate-lime dust were used on hull-less oats in the experiments. The treatments given controlled oat smut to a marked degree. There was some reduction of germination in the treated grain, except with copper carbonate dust.—*J. E. Machacek.*

8929. DORAN, W. L. Laboratory studies of the toxicity of some sulphur fungicides. New Hampshire Agric. Exp. Sta. Tech. Bull. 19: 3-11. 1922.—The sulphides of calcium which are present in commercial lime-sulphur spray at ordinary dilutions were found to be much more toxic to the conidia of apple scab (*Venturia inaequalis*) than are the products of decomposition resulting from drying of the mixture. When dried slowly the sulphides of calcium are entirely decomposed and the toxicity is much less than when the mixture is dried rapidly and some sulphides remain undecomposed. The fungicidal property which is possessed by the products of decomposition appears to be due to the sulphur. Sulphur was found to have no fungicidal properties in the absence of oxygen and in the presence of oxygen its fungicidal value increased as the temperature was raised. The germination of spores of *Venturia inaequalis* and *Sclerotinia fructigena* is prevented after dusting with sulphur if they are held for 5 hours at 26.5°C. Germination of aeciospores of *Cronartium ribicola* is prevented by exposing for 5 hours at 26°C. after dusting with sulphur, while the urediniospores fail to germinate if exposed 5 hours at 24°C. The smaller particles of Schloesing's precipitated sulphur are more toxic to conidia of *Venturia inaequalis* than finely ground flour of sulphur.—*G. F. Potter.*

8930. FONZES-DIAÇON. La lutte contre l'Oidium. [The fight against Oidium.] Prog. Agric. et Vitic. 83: 16-18, 40-42. 1925.

8931. GAINES, J. G. Potato scab control studies in 1923. New Jersey Agric. Exp. Sta.

Ann. Rept. 45: 414-421. 1924 [1925].—A comparison was made of 200, 80 and 20 mesh [to the inch] sulphur and of different amounts of sulphur applied in combination with equal amounts of rock phosphate. In one test best control of scab followed an application of 500 pounds of 200 mesh sulphur, slight effect resulting from the use of the 80 or 20 mesh material. The use of the finer material also brought about the greatest increase in soil acidity. The application of 1200 pounds of the sulphur-rock phosphate mixture gave better control of scab than the use of smaller amounts, and this mixture was more efficient than sulphur alone, although it produced a smaller increase of acidity.—*Wm. H. Martin.*

8932. GARD, M. *La lutte contre le dépérissement des noyers.* [Combating walnut wilt.] Bull. Office Agric. Rég. Massif Central, Clermont-Ferrand 1924: 67-73. 1924.—Two forms of walnut wilt are recognized: 1. Dieback, or blanching, may be corrected to some extent with iron sulphate. Trials with resistant stocks are in progress. The author refers to experiments on the American black walnut, *Juglans nigra* (which according to Kreitmann is immune to rot in the Sacramento Valley), but he does not consider the special method of Treyve, by grafting on the root, to be of value. 2. Blackening causes a slower decline and responds to fertilizers and cultural conditions.—*A. Dusseau (transl.).*

8933. GORDON, GEORGE S. *Murrayville crop and fallow competition, 1924.* Jour. Dept. Agric. Victoria 23: 23-32. 8 fig. 1925.—Take-all (*Ophiobolus cariceti*) is probably the most serious problem in this district. Clean fallowing especially on limestone soils, planting oats on clean fallow, and a liberal use of superphosphate are the chief control measures recommended. Oats is practically immune to the disease. Improved Gluyas was most resistant and Federation rather susceptible to take-all.—*Wm. E. Lawrence.*

8934. GORDON, W. L. *Studies concerning injury to seed oats after smut disinfection.* Rept. Quebec Soc. Plant Protect. 16: 79-94. 4 pl. 1924.—Hull-less oats were injured by formalin treatment, especially after dry storage, while hulled oats were uninjured. Increasing the temperature of the solution was more detrimental to the hull-less than to hulled oats. Presoaking of hull-less oats in water reduced the amount of injury as did dipping seed after formalin treatment in lime-milk solution. Injury was shown by retardation of growth or death of the radicle. Copper carbonate dust did not decrease germination.—*J. E. Machacek.*

8935. GRAM, E., OG K. KRISTENSEN. *Elektrisk Behandling af Saasae efter Wolfrynmethode.* [Electric treatment of seed after the Wolfryn method.] Ber. Planteavl. Fyen 1921: 70-73. 1922.—The English method of treating seed with an electric current in order to improve germination and secure disinfection was tried on rye infected with stem-smut (*Urocystis occulta*) and on wheat infected with bunt (*Tilletia caries*). To analyze the effects of time and disinfected with copper sulphate. Germination tests in laboratory and field proved that the Wolfryn treatment reduced germination considerably, but not so much as the salt water. Copper sulphate used alone has given a satisfactory disinfection. In the field tests the Wolfryn plots showed a high percentage of infection while the yield was decreased.—*Ernst Gram.*

8936. HECKMANN, F. *Zur Frage der Kartoffelbeizung mit Uspulun und Uspulun-Bolus.* [Treatment of potatoes with "Uspulun" and "Uspulun-bolus."] Illus. Landw. Zeitg. 44: 247-249. 1924.—The results of field tests were generally favorable to the use of Uspulun as a fungicide for seed potatoes. The 0.25% and 0.125% solutions appeared most promising. Uspulun-bolus did not give as good results.—*John W. Roberts.*

8937. HENNING, E. *Berberis-lagen och berberis-utrotningen.* [The barberry law and the eradication of the barberry.] K. Landtbr. Akad. Handl. o. Tidskr. 62: 674-686. 1923.—The events leading up to the passage of legislation regarding eradication of the barberry from portions of Sweden, which took effect August 1, 1918, are discussed. The need for barberry eradication in Sweden, the necessity for legislation in addition to educational methods, practical methods of eradication, and the deficiencies of the present law are treated. Emphasis is placed on the need for improving the law so that the sale and planting of barberries be forbidden and that eradication be kept up until all these shrubs growing in cereal districts have been removed.—*F. E. Kempton.*

8938. HILTNER, E. *Hafer-Dorrfleckenkrankheit und Hederichbekämpfung.* [The dry-

spot disease of oats and the control of hedge-mustard.] Illus. Landw. Zeitg. 46: 188-190. 3 figs.—Application of a solution containing 15% of iron sulphate and 5% of manganese chloride prevented a non-parasitic disease of oats called dry-spot, and destroyed the mustard.—*John W. Roberts.*

8939. JACKSON, V. W., W. P. FRASER, AND D. L. BAILEY.—The present status of the barberry eradication campaign in Western Canada. Sci. Agric. 5: 375-378. 1925.—For the past 8 years a cooperative barberry eradication project has been carried on in Manitoba, Saskatchewan and Alberta by the Dominion and Provincial governments. Comparatively few plantings have been located, as the barberry does not find conditions congenial. There is no record of wild or naturalized barberry. From the limited observations made it does not appear that the barberry plays an important part in starting rust epidemics. The potential danger, however, justifies its complete eradication.—*T. G. Major.*

8940. KEIM, F. D. A fumigation room for farm crops and laboratory supplies. Jour. Amer. Soc. Agron. 17: 634-39. 1925.

8941. KRESS, OTTO, C. J. HUMPHREY, C. A. RICHARDS, M. W. BRAY, AND J. A. STADL. Control of decay in pulp and pulp wood. U. S. Dept. Agric. Dept. Bull. 1298. 1-80. 1925.

8942. LEDUC, A. La bouillie bordelaise et sa composition chimique. [Bordeaux mixture and its chemical composition.] Sci. Agric. 6: 60-64. 1925.—The conclusion is reached that Bordeaux mixture is composed of basic copper sulphates and calcium sulphate. The presence of copper hydroxide is indicated by the blue color of the mixture.—*T. G. Major.*

8943. LODGE, U. S. A new method of controlling blackspot. Florists' Exchange 57: 437, 469. 1 fig. 1924.—In addition to sanitary measures, the author advocates spraying roses affected with blackspot with sodium carbonate. The crystalline salt is used at the rate of 1½ ounces to the gallon of water; ¾ ounce of the dry salt to the gallon of water is said to be sufficient.—*F. F. Weinard.*

8944. McDONNELL, C. C., AND H. D. YOUNG. Loss of nicotine from nicotine dusts during storage. U. S. Dept. Agric. Dept. Bull. 1312. 1-14. 1925.—The rate of loss of nicotine from nicotine sulphate dusts prepared with kaolin, kieselguhr, talcum, plaster of Paris, calcium hydrate and calcium carbonate follows the order given. Dusts made with free nicotine lose their nicotine much more rapidly than dusts made with nicotine sulphate. Canvas bags, pasteboard boxes, and paraffined boxes were found to be unsatisfactory as containers for nicotine dusts. Solutions of nicotine sulphate exposed to the air at room temperature became concentrated to 45.5% nicotine with little or no loss of nicotine. Under the same conditions free nicotine solutions became concentrated to 89%, but lost 10-17% of the nicotine originally present.—*H. D. Young.*

8945. MARTIN, WM. H. Oat smut control studies. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 390-392. 1924 [1925].—A comparison was made of various chemical dusts, and of the copper-sulphate dip, and formaldehyde spray and sprinkle. Germination tests were conducted both on blotters and in sand. In the former there was indication of injury following the copper-sulphate dip and Semesan dust treatments. In the soil there was but little difference, all the treated lots germinating better than the untreated seed. Best control followed the formaldehyde sprinkle method, this treatment showing only 0.16% smut as compared with 4.13% in the checks. Control was approximately as good, however, from the copper-sulphate dip, formaldehyde spray, and the nickel and carbonate dusts, all of which gave better results than the organic mercury compounds. With the exception of the copper-sulphate dip and the dehydrated copper-sulphate-lime treatments, all the treated plots gave an average yield greater than that of the checks.—*Author.*

8946. MARTIN, WM. H. Potato spraying and dusting in 1923. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 381-389. 1924 [1925].—In a spray test with the Irish Cobbler variety, 5 applications of 5-5-50 homemade Bordeaux mixture gave an increase of 27.7 bushels over the adjoining checks as compared with 26.9 for Bordeaux-Kayso and 29.8 for Pyrox.—In a 2nd test the average yield of the check plots was 235.8 as compared with 253.4, 254.1 and 231.8 bushels for those receiving 8 applications of 5-5-50 Bordeaux mixture, Bordeaux-Kayso and those dusted 8 times with copper-lime-dust respectively.—In a test with American Giant, plots receiving 8 applications of Bordeaux mixture gave an increase in yield amounting to

24.3 bushels while 4 late applications increased the yield 18.4 bushels.—In a test with the Norcross variety, the yield of the check plot was 223.1 bushels, of those receiving 9 applications of Bordeaux mixture 272.6 bushels, Bordeaux mixture plus Kayso, 277.3 bushels and copper-lime dust, 229.4 bushels.—Two tests were conducted with late planted Irish Cobblers. In the 1st, the yield of the check plot was 110.2 bushels and the plots sprayed 4 times with Bordeaux mixture 137.1 bushels.—In the 2nd test the average yield of the unsprayed plots was 91.6 bushels, of those sprayed 4 times with 5-5-50 Bordeaux mixture prepared with stone lime, 116.0 bushels; those with Bordeaux mixture prepared with hydrated lime 126, and those sprayed twice with 10-10-50 Bordeaux mixture, prepared with stone lime, 113 bushels.—In all the above tests the increased yields resulted from the control of hopper burn, tip burn and flea beetle; no late blight was observed and only a trace of early blight.—*Author*.

8947. MELANDER, A. L. Notes on oil sprays. Jour. Econ. Entomol. 18: 681-686. 1925.—Many orchard trees have suffered heavily as a result of the severe freeze of December 1924. Some fruit growers have ascribed the injury to the use of oil sprays. However, representatives of the Washington Experiment Station found no correlation between the extent of winter injury and the use of oil sprays. Caseinate spreaders detracted from the effectiveness of oil sprays when used experimentally on San Jose scale and on eggs of leaf-roller.—*Author*.

8948. MOREAU, L., ET E. VINET. Contribution à l'étude de l'apoplexie de la vigne et de son traitement. [Treatment of apoplexy of the vine.] Prog. Agric. et Vitic. 79: 87-89. 1923.—This malady is attributed to wood decay which interferes with movement of water. Spraying with sodium arsenite is reported to control the disease.—*E. L. Proebsting*.

8949. MOREAU, L., ET E. VINET. L'apoplexie de la vigne. [Apoplexy of the vine.] Prog. Agric. et Vitic. 81: 109-110. 1924.—Data are presented on the use of sodium arsenite for the control of this disease.—*E. L. Proebsting*.

8950. MORSE, STANLEY F. Airplane dusting for cranberry pest control. Amer. Cranberry Growers' Assoc. Proc. Ann. Conv. 56: (4-8). 1925.—Airplane dusting of crops is accomplished by mechanically dropping dust into the stream of air behind the propeller of a low flying airplane. A plane can dust 500-2000 acres per day and its cost is less than ordinary spraying. The injury to soil and plants caused by the moving of hose is eliminated and the dusting may be done immediately after a rain. The author recommends that groups of growers coöperate and engage an airplane to do all their dusting.—*C. S. Beckwith*.

8951. MÜLLER, H. C., E. MOLZ, UND K. MILLER. Über die Saatgutbeize zur Bekämpfung des Wurzelbrandes der Rüben. [Treatment of sugar beet seed for control of damping off.] Zuckerrübenbau 7: 41-47. 1925.—It is claimed that about 70% of all beet seed is fungus-infected. Experiments are cited showing improved germination and increased sugar content from seed treatment with Betanal, Germisan, and Uspulun.—*B. Nebel*.

8952. MULLETT, H. A. Murrayville crop and fallow competition. Jour. Dept. Agric. Victoria 22: 77-83. 5 fig. 1924.—Burning the stubble, summer fallowing, and rotating with a crop of oats is recommended for control of take-all (*Ophiobolus graminis*).—*Wm. E. Lawrence*.

8953. MULLETT, H. A. Wheat pickling. The new dry process. Jour. Dept. Agric. Victoria 23: 283-288. 1925.—The superiority of copper carbonate treatment for bunt is shown.—*Wm. E. Lawrence*.

8954. [ПОТАПОВ, А.] Потапов, А. Биологический метод борьбы с осокой [A biological method of control of *Cirsium arvense*.] (English Summary.) Из работ отд. прикл. бот. Вост.-Сибир. С.-Хоз. опытной ст. Иркутск [Works of the Div. of Applied Bot. E.-Sib. Agric. Exp. Sta.] 1925: 3-18. 1925.—Among the weeds of the Siberian fields, *Cirsium arvense* is most dangerous. The author made experiments of infecting these weeds with *Puccinia suaveolens* and obtained good results. For artificial inoculation he used the naturally infected plants of *Cirsium* previously washed in water. The spraying with this brown liquid was made in the evening when the temperature was about 10°C., the most favorable temperature for germination of the uredospores, as found by the author. It is necessary to repeat the spraying several times. The work is being continued in order to find the most active form of the rust and to decrease the resistance of *Cirsium* to the fungus.—*Author*.

8955. RAMSBOTTOM, J. K. The control of the narcissus Eelworm. Gard. Chron. III. 77: 79, 96. 1925.—Notes are given on the correct use of the sterilizing apparatus.—*P. L. Ricker*.

8956. REICHERT, I., AND F. LITTAUER. **Disinfection of tobacco seeds.** Zionist Organization Inst. Agric. and Nat. Hist. Agric. Exp. Sta. Circ. 1. (In Hebrew with English summary.) 10 p. 1925.—On account of the importance of tobacco cultivation in Palestine and the necessity of timely precautions against introduction of seed-borne diseases seed treatment is recommended. Sublimate proved unsuitable in all concentrations tried; formalin 0.1%, copper sulphate 0.5%, Uspulun 0.2% and Germisan 0.2% gave germination above the checks, Germisan being best.—(*From Author's summary.*)

8957. ROACH, W. A., MARY D. GLYNNE, WM. B. BRIERLEY, AND E. M. CROWTHER. **Experiments on the control of wart disease of potatoes by soil treatment with particular reference to the use of sulphur.** Ann. Applied Biol. 12: 152-190. 2 pl., 13 fig. 1925.—This is a progress report on several years of study concerning the effect of chemical treatment of the soil on infection with potato wart. Pot experiments in which the chemicals were very carefully incorporated with the soil to obtain a maximum fungicidal value showed that several compounds apparently reduced the amount of wart: the results were not entirely satisfactory, however, and dependence was thereafter placed only on field tests. The chemicals that proved of value in pot experiments were tried in the field, mixing with the soil being accomplished very successfully with the Simar Rotary Tiller. Sulphur proved most favorable both as to cost and effectiveness and was further studied. At Ormskirk on sandy soil the amount of infection decreased steadily with increasing amounts of sulphur up to 1000 pounds per acre. Complete eradication was not attained but it was impossible to keep the disease from being spread from check plots and some infection may have been carried in by this means. In order to obtain a clean crop at Hatfield on heavy clay soil the sulphur applications had to be increased to 2 tons per acre. Inoculated sulphur was no better than ordinary sulphur at Ormskirk and much less effective at Hatfield. Studies of soil reaction indicated that the effect of the sulphur on the soil reaction was not the cause of the reduction of wart.—*A. F. Camp.*

8958. SCHLOSSER, JAC. **Meine Erfahrungen mit Arsenbrühen zur Bekämpfung von Obstbaumschädlingen.** [Experiments with arsenicals in the control of orchard diseases.] Anzeiger Schädlingkunde 1: 4-5. 1925.

8959. THAKAR, B. J. **Stored grain pests in Gujarat.** Poona Agric. Coll. Mag. 17: 131-139. 1925.—The author discusses pests and methods of storage of grain and presents evidence which seems to show that mercury may be a practical preventive of insect attack in jowar stored for seed. It is very doubtful how far it would be admissible in grain for consumption.—*Frederick V. Rand.*

8960. THOMAS, G. R. **Numurkah crop and fallow competition.** Jour. Dept. Agric. Victoria 23: 339-342. 1925.—Recommendations are given for the prevention of flag smut, loose smut, ball smut, and take-all.—*Wm. E. Lawrence.*

8961. TISDALE, L. E. **Colloidal sulphur: preparation and toxicity.** Ann. Missouri Bot. Gard. 12: 381-418. 1 pl. 1925.—The stability of colloidal sulphur suspensions depends upon the temperature of the chemical solutions while introducing the protective colloid. Glue has been found most effective in the preservation of this stability. Na_2CO_3 and Na_2HPO_4 give good results in adjusting suspensions prepared from hypo and H_2SO_4 , while in the preparation of suspensions of sulphur "from lime sulphur, weak rather than strong solutions of HNO_3 and H_2SO_4 were more satisfactory." The colloidal sulphurs so prepared were toxic to many fungi tested, while under greenhouse conditions they stick and spread well without injury to foliage. Carnation rust was controlled by colloidal sulphur freshly made from SO_2 and H_2S . Colloidal sulphurs prepared in different ways seem to exhibit different degrees of toxicity, perhaps due to different toxic substances. With higher pH values the toxicity increases in colloidal sulphur from SO_2 and H_2S while in Young's hydrophilic form the greatest toxicity range is pH 4.2-5.4. Toxicity is lost with loss of stability. Desiccation or aeration do not destroy the toxicity and stability of suspensions prepared from SO_2 and H_2S .—*S. M. Zeller.*

8962. TUBEUF. [Rev. of: MORSTATT. **Bibliographie der Pflanzenschutzliteratur für das Jahr 1921.** (Bibliography of plant protection literature for 1921.) P. Parey: Berlin, 1922.] Forst. Centralbl. 45: 147. 1923.

8963. TUBEUF. [Rev. of: MORSTATT, H. **Bibliographie der Pflanzenschutz-Literatur. Das Jahr 1922.** (Bibliography of plant protection literature for 1922.) 163 p. (Biol. Reichanst. Land-Forstw.) P. Parey: Berlin, 1923.] Forstw. Centralbl. 45: 474. 1923.

8964. VERMOREL, V. Le permanganate de potasse contre l'Oidium. [Potassium permanganate against Oidium.] Prog. Agric. et Vitic. 84: 80-83. 1925.—Best results were obtained by adding 125 gm. per hectolitre to Bordeaux mixture.—*E. L. Proebsting*.

8965. VILLEDIEU, G. À propos de l'action des bouillies anticryptogamiques. [The action of fungicidal mixtures.] Prog. Agric. et Vitic. 81: 349-351. 1924.

8966. WEBER, H. [Rev. of: MORSTATT, H. Bibliographie der Pflanzenschutz-Literatur. Herausgegeben von der Biologischen Reichsanstalt für Land- und Forstwirtschaft in Berlin-Dahlem. Das Jahr. 1924. 226 p. P. Parey & Julius Springer: Berlin, 1925.] Allg. Forst. u. Jagd.-Zeitg 102: 34. 1926.

8967. WINSTON, JOHN R., JOHN J. BOWMAN, AND W. W. YOTHERS. Bordeaux-oil emulsion. U. S. Dept. Agric. Dept. Bull. 1178. 1-23. 3 fig. 1923.—Bordeaux-oil emulsion is made by pouring 1% oil in the form of an oil emulsion slowly into standard Bordeaux mixture in the spray tank while the agitator is running. In Florida citrus groves the Bordeaux fraction is highly effective against fungi, and the oil-emulsion fraction against insects. The combination spray settles less rapidly, spreads more uniformly and sticks at least as well as plain Bordeaux mixture.—*H. R. Fulton*.

8968. [WOGLUM, R. S.] The value of sprays and fumigation for resistant black scale control. An analysis based on conditions in eastern Los Angeles and western San Bernardino counties, California. 20 p., 2 fig. California Fruit Growers' Exchange: Los Angeles, 1925.

GENERAL AND MISCELLANEOUS PATHOLOGICAL LITERATURE

8969. ANONYMOUS. Argentina: Plant inspection. Bull. Pan-Amer. Union 56: 385-386. 1923.—A recent order of the Minister of Agriculture calls for the inspection of plants, seed, bulbs, fruits, vegetables, and similar exports. The ports of Buenos Aires, Bahia Blanca, Rosario, Mendoza, and other cities are to be provided with Government inspectors of plants to examine grafting slips, tubers, bulbs, seed, fruits, and grains as to their sanitary condition and packing. All exporters of plants or seed, whether for sowing, food, or industrial use, must furnish an invoice to the Ministry of Agriculture. All plants and grafts for export will be disinfected if necessary, those with incurable diseases being burned without indemnity to the shipper. Tubers and bulbs to be exported for planting are to be selected, while seed for planting will be tested for fertility and presence of weeds.—*M. N. Levine*.

8970. ANONYMOUS. Dominican Republic: Protection against plant diseases. Bull. Pan-Amer. Union 59: 1261-1262. 1925.—In order to protect native agriculture against plant diseases from abroad, a decree, which appeared in the Gaceta Oficial of Aug. 8, 1925, forbids the introduction into the Dominican Republic of any kind of bags that have previously contained fruits or vegetables or the material from such bags.—*M. N. Levine*.

8971. ALEXANDER, W. B. Natural enemies of the prickly pear and their introduction into Australia. Commonwealth Inst. Sci. and Indust. Bull. 29. 1-80. Govt. Printer: Melbourne, 1925.

8972. ALSTON, R. A. Report of the Assistant Botanist and Mycologist. Repts. Dept. Sci. and Agric. year ended 31st Dec. 1924. Appendix 3. 1-12. 1925.—Plant disease investigations are reported.—*Frederick V. Rand*.

8973. APPEL, O. Taschenatlas der Kartoffelkrankheiten. 1 Teil. Knollenkrankheiten. [Pocket handbook of potato diseases. Part 1. Tuber diseases.] 24 col. pl. P. Parey: Berlin, 1925.

8974. AUSBORN. Ueber die Vererbung der Staudenkrankheiten der Kartoffel. [The transmission of diseases of the vegetative organs of the potato.] Illus. Landw. Zeitg. 44: 271-272. 1924.

8975. BOURNE, B. A. Researches on the root disease of sugar cane. 17 p., 5 pl. Advocate Co., Ltd., Printers to the Govt.: Bridgetown, Barbados [1922].

8976. BROEK, M. VAN DEN, UND P. J. SCHENK. Ziekten en beschadigingen der tuinbouwgewassen, ten dienste van tuinbouwscholen en cursussen en de practijk. 1B, Dierlijke en plantaardige parasieten in boomkweekerijen, bloemisterijen en tuinen. [Diseases and injuries of garden crops: Vol. 1B, Animal and vegetable parasites of tree and flower nurseries and gardens.] 4^e geheel omgewerkte druk. xl + 360 p. Illus. J. B. Wolters u. m.: Gröningen, 1925.

8977. BURNS, AND MUNGOMERY. Investigation of pests and diseases [of sugar cane]. *Queensland Agric. Jour.* 24: 334-336. 1925.
8978. GARNE, W. M. A preliminary census of the plant diseases of southwestern Australia. *Jour. and Proc. Roy. Soc. Western Australia* 11: 43-68. 1924-1925.—This gives appropriate climatic data as related to plant diseases, and a list of diseases with hosts and time of first recorded appearance.—*Wm. Randolph Taylor.*
8979. COOK, MELVILLE, T. Relationship of cane varieties to disease. *Jour. Dept. Agric. Porto Rico* 9: 277-281 (1925).—This is a discussion of the importance of the resistance of varieties to disease and the known relationship of several varieties to certain well known diseases. The author calls attention to the sudden development of severity of some diseases following the development of certain new varieties and predicts that the future development of varieties will result in some of our minor diseases becoming important.—*Author.*
8980. COOK, MELVILLE T., AND H. L. DOZIER. Spraying citrus fruits in Porto Rico. *Porto Rico Insular Exp. Sta. [Rio Piedras] Circ.* 88. 1-23. 1925.—This gives a brief discussion of the more important diseases and insects in Porto Rico, and of methods of spraying and preparing spray mixtures. It also gives a list of the diseases reported in Porto Rico, Cuba, Florida and California.—*Melville T. Cook.*
8981. COTTRELL-DORMER, W. Cane pests and diseases. *Queensland Agric. Jour.* 24: 441-443. 1925.—Notes on leaf scald, leaf stripe, foot rot and insect pests in the Mossman and Babinda Districts of North Queensland.—*W. D. Francis.*
8982. COTTRELL-DORMER, W. Diseases of sugar cane. *Australian Sugar Jour.* 17: 465-466. 1925.
8983. COTTRELL-DORMER, W. Sugar cane diseases and pests, Bureau of Sugar Experiment Stations. *Australian Sugar Jour.* 17: 502-503. 1925.
8984. D, B. T.—[Rev. of: CHUPP, CHAS. *Manual of vegetable diseases.* Macmillan Co.: New York, 1925.] *Sci. Agric.* 5: 353. 1925.
8985. DICKSON, JAMES G. The relation of plant physiology and chemistry to the study of disease resistance in plants. *Jour. Amer. Soc. Agron.* 17: 676-695. 1925.—A study of the chemistry and physiology of parasitism must eventually lead to an explanation of the nature of disease resistance.—*F. M. Schertz.*
8986. FÖEX, E., ET C. CHABROLIN. Les maladies des arbres fruitiers et leurs traitements. [Diseases of fruit trees and their treatment.] *Prog. Agric. et Vitic.* 80: 249-257, 274-278, 303-307, 328-333. 3 pl. 1923.
8987. GYE, W. E. Filter-passing viruses and cancer. *British Med. Jour.* 337: 189-192. 1925.—This is a general discussion of filterable viruses with special emphasis on the author's work on the experimental production of chicken sarcoma by inoculation with cell-free filtrates obtained from tumors. The view is upheld that the virus of chicken sarcoma is not a stage in the life cycle of some larger bacterium.—*From abst. by S. A. K. (Contrib. by Absts. Bact.)*
8988. HAMBURGER, FRANZ. Ueber Ansteckung und Krankheit. [Infection and Disease.] *München. Med. Wochenschr.* 72¹: 215-218. 1925.
8989. HAUMAN, LUCIEN. Sobre un parásito de las floras del *Paspalum dilatatum*. [A parasite of the florets of *Paspalum*.] *Physis* 5: 327-328. 1922.
8990. HOCHREUTINER, B. P. G. Les hôtes du *Rafflesia Patma* Bl. et du *R. Rochussenii* Teijsm. et Binn. [The hosts of *Rafflesia Patma* spp.] *Verh. Naturf. Ges. Basel* 35: 103-110. 1923.
8991. IDETA, ARATA. A brief history of plant pathology in Japan. (In Japanese.) *Ann. Phytopath. Soc. Japan* 1⁶: 48-52. 1925.—A continuation of *Ibid* 1¹: 1918.
8992. KONING, M. DE. Boschbescherming; de leer der ziekten en beschadigingen der houtgewassen. [Forest protection; the study of diseases and injuries of trees.] *xiv + 567 p. Portrait, illus.* W. J. Thieme et Cie: Zutphen, 1922.
8993. LEWIN, CARL. Invisibles Virus und maligne Geschwülste. [Invisible virus and malignant tumors.] *Zeitschr. Krebsf.* 22: 455-471. 1925.—A complete and up-to-date review and discussion of the literature, indicating that filterable viruses may be the cause of malignant tumors.—*M. N. Levine.*
8994. LOREE, R. E., AND C. W. BENNETT. The raspberry situation in Michigan. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 31-33. 2 fig. 1922.—A survey of the raspberry plantations

in 2 counties showed that anthracnose and cane blight occurred in nearly every field. Crown gall was very abundant, especially in the red varieties. Leaf curl, mosaic and blue stem were well distributed but were still absent in the majority of commercial plantings. Careful roguing has kept these troubles from spreading, especially in the better plantations. Some nurseries, however, were very badly infested with these diseases.—*Ernst A. Bessey.*

8995. McCALLUM, A. W. Abstracts of Canadian plant pathological literature. Rept. Quebec Soc. Protect. Plants 17: 84-88. 1925.—References concerning 24 papers published in Canadian journals.—*J. E. Machacek.*

8996. MARTIN, WM. H. Report of the Department of Plant Pathology. New Jersey Agric. Exp. Sta. Ann. Rept. 45: 373-381. 1924 [1925].—A brief statement of activities, and a list of the important diseases of the year with notes on their prevalence are given. This includes 139 diseases on 50 crops.—*Author.*

8997. MURRAY, J. C. [Report of southern field assistant, Bureau of Sugar Experiment Stations.] Australian Sugar Jour. 17: 577-578. 1925.—Observations on varietal reaction of sugar cane to gumming disease and frost in the Nambur district.—*Nellie E. Fealy.*

8998. NICOLE, M., ET E. CESARI. Remarques sur la virulence. [Notes on virulence.] Ann. Inst. Pasteur 38: 73-80. 1924.

8999. NOBÉCOURT, P. L'anaphylaxie chez les végétaux. [Anaphylaxis in plants.] Bull. Soc. Bot. France 72: 1094-1099. 1925.—The author has investigated the contradictory results relative to anaphylaxes obtained by A. Lumière and H. Couturier. His experiments, like those of the Italian, Carbone, were negative. Like Lumière, he used bulbs, but preferred especially the aerial leaves of onions or the stems of beans. The latter present a continuous medullary canal through which injections of serum and neutral red easily pass. The dye makes the liquid visible and is easily absorbed. In spite of successive inoculations the treated beans never differed from the controls. The author explains the divergency in results by two hypotheses. In the positive experiments of Lumière, (a) the death of the plants arose from accidental causes not connected with anaphylaxis; or (b) the anaphylactic shock depended on circumstances not yet defined, which were realized in Lumière's experiments but not in those of Carbone and of the author.—*J. Beauverie (translated by F. V. Rand).*

9000. NOWELL, W., AND F. W. URICH. Notes on the proclaimed diseases and pests. Bull. Dept. Agric. Trinidad and Tobago. 194: 175-181. 1922.—Bud-rot, red ring and little leaf diseases of the coconut are described. The cause of bud-rot is uncertain. In part it has been shown to be due to *Phytophthora* and in the West Indies it is apparently due to one or more species of bacteria. It is recommended to tie a quantity of copper sulphate in a piece of sack-cloth and fasten in such a way that rain will carry the copper sulphate to the leaf bases. The red ring disease has been found due to a nematode. As the name indicates, little-leaf disease may be detected by the badly formed leaves which decrease in size and finally form a crown of stumps not more than 1-2 feet long topping a stem possibly 20-30 feet high. Trees of all ages may be affected. The cause of the disease is unknown but in the early stages there is conspicuous a species of yeast which may be accompanied by a rod-like bacterium. A brief survey of sugar cane mosaic is made. *Gloeosporium limeticolum* is the causal organism of a highly infectious disease of the lime and some varieties of lemons. Bordeaux mixture, or preferably lime-sulphur mixture, is recommended. Semi-parasitic flowering plants belonging to the Loranthaceae and the parasite, *Cuscuta americana*, are discussed. The remedy is to cut off and burn infected branches.—*Florence A. McCormick.*

9001. OSBORN, E. H. [Report of central field assistant of the Bureau of Sugar Experiment Stations.] Australian Sugar Jour. 17: 569-575. 1925.—Observations on the symptoms, etiology and environmental relations of the red spot disease of cane in the Mackay area, and the reaction of several varieties; also on control of the cane-killing weed.—(From abstract by *Nellie E. Fealy.*)

9002. OSBORN, E. H. Report of Northern Field Assistant, Bureau of Sugar Experiment Stations. Australian Sugar Jour. 17: 504-505. 1925.—Observations on leaf scald and leaf stripe of sugar cane.—*Nellie E. Fealy.*

9003. PARKER, FREDERICK, JR., AND ROBERT N. NYE. Studies on filterable viruses. I. Cultivation of the vaccine virus. Amer. Jour. Path. 1: 325-335. 1925.—The vaccine virus

was cultivated in tissue cultures composed of normal tissues. The presence of previously infected living cells was not necessary. It was also cultivated for 132 days in an artificial medium consisting of normal plasma and pieces of normal rabbit testis that had been soaked for 5 minutes in a heavy emulsion in Ringers' solution of a 71-day-old, glycerinated, virus-infected rabbit testis. A method for testing the virus content of a culture was devised. It was suggested that the virus grows only in close proximity to the cells.—*J. G. Leach.*

9004. PARKER, FREDERICK, JR., AND ROBERT N. NYE. *Studies on filterable viruses. II. Cultivation of herpes virus.* Amer. Jour. Path. 1: 337-340. 1925.—Attempts were made to cultivate the herpes virus but no definite proof of multiplication was obtained, although in one culture, while the 3rd generation gave negative results, the 5th generation was positive.—*J. G. Leach.*

9005. SAMUEL, G. *Tomato diseases.* Jour. Dept. Agric. South Australia 29: 328-333. 1925.

9006. SCHANDER, R. *Die wichtigsten Kartoffelkrankheiten und ihre Bekämpfung.* [Important potato diseases and their control.] Ed. 4, 118 p., 34 fig. Berlin, 1925.—This is intended primarily for the practical grower as a reference manual of disease control, but certain contested questions of etiology also are reviewed. The systemic disorders of the leaf-roll and curl type are distinguished and individually described. The bacterial ring disease (*Bact. sepedonicum* Spiek. and others) is presented in considerable detail. The relation of insect injuries to bacterial tuber rots and stem diseases is discussed, and a chapter is devoted to injuries caused by insects, mites, and nemas. Diseases and losses in storage and transit also are reviewed.—*F. Weiss.*

9007. SCHWARTZ, MARIE BEATRICE. *Djamoer oespas in de djati.* [Pink disease of teak.] (English Summary.) Inst. Plantenziekt. Med. 68. 1-17. 5 pl. Landsdrukkerij: Weltevreden, 1925.

9008. SHAW, F. J. F. *Studies in diseases of the jute plant (2) Macrophoma corchori* Saw. Mem. Dept. Agric. India, Bot. Ser. 13⁶: 1924.

9009. SIMMONDS, H. W. *Pests and diseases of the coconut palm in the Islands of the Southern Pacific.* Dept. Agric. Fiji Bull. 16. 1-32. 4 pl. Govt. Printer: Suva, 1925.

9010. SMOLÁK, J. *Hypertrofié infikovaných vlásků kořenových.* [Hypertrophy of infected rhizomes.] Preslia 2: 113-116. 1923.

9011. THEOBALD, F. V., AND J. RAMSBOTTOM. *Enemies of the rose.* New ed. National Rose Society: London, 1925.—The 1st part of the book gives a concise discussion of the life histories and habits of the more important insects which attack roses, including beetles, bees and sawflies, moths, flies, aphids, scale insects, leafhoppers and froghoppers, thrips and red spider. Methods of controlling the insects are given briefly. The "Rose diseases caused by fungi" in the latter part of the book include the common diseases such as mildew, black spot, rust, various types of cankers, as well as those more recently reported in Europe,—die back (*Gnomonia rubi* Rehm.), *Gnomonia rosae* Fuckel, and leaf scorch (*Septoria rosae* Desm.). Life history and control measures are given for each disease.—*Alma M. Waterman.*

9012. TORO, RAFAEL A. *La influencia del ambiente en la protección de las plantas contra enfermedades.* [The environmental factor in the protection of plants against disease.] Puerto Rico Ins. Exp. Sta. Circ. 90. 1-10. 1925.

9013. [VANIN, S. I.] Ванин, С. И. *О применении вариационной статистики в фитопатологии и микологии.* [Application of the variation-statistics in phytopathology and mycology.] (German Summary). Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden, R. S. S. R.] 1925: 113-127. 1925.—The author shows certain examples where the statistical method is applicable to phytopathology and mycology. A list of the more important Russian literature on the subject is given.—*C. D. Sherbakoff.*

9014. WEBER, G. F. *Diseases of cucumbers.* Florida Agric. Exp. Sta. Bull. 177. 25-72. 32 fig. 1925.—The following diseases affecting cucumbers in Florida are described and control measures given: downy mildew, anthracnose, angular leaf spot, root knot, wilt, black rot (*Mycosphaerella citrullina*), Stem rot (*Sclerotium sclerotiorum*) and miscellaneous wilts and leaf spots.

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

HEBER W. YOUNGKEN, *Editor*E. N. GATHERCOAL, *Assistant Editor*

(See also in this issue Entries 6725, 6733, 6734, 6819, 7034, 7101, 7229, 8173, 8231, 8391, 9273, 9293, 9507, 9636)

9015. ANONYMOUS. The oil-palm on the Gold Coast twenty years ago. *Tropical Life* 21⁸: 113-114. 1925.—This is a reprint of an article in *Ibid*, October, 1907, which gives a description of the oil-palm, its uses, soil and climatic requirements, methods of propagation and cultivation, and the 4 principal varieties with their evaluation as oil producers.—*H. N. Vinall*.

9016. ANONYMOUS. [Rev. of: BARNES, A. C. *Chemical investigation into the products of the oil palm*. 75 p. Department of Agriculture, Ibadan, Nigeria, 1924.] *Kew Bull.* 1925: 439, 440. 1925.—The experiments on which this publication is based are largely with *Elaeagnus guineensis* var. *communis* forma *dura*.—*T. J. Fitzpatrick*.

9017. ANDERSON, J. R. Trees and shrubs, food, medicinal and poisonous plants of British Columbia. Dept. Education: Victoria, British Columbia, 1925.

9018. AUMELAS, HENRI. Les prêles sont un poison pour les bovidés. [Horsetail (*Equisetum*) is a poison to cattle.] *Naturaliste Canadien* 52: 56-58. 1925.—Contains references to experiments in France, on 17 animals fed under observation with equisetum in their hay. Symptoms of poisoning, effect of aging the equisetum and extracting the poison by macerating in water are popularly described.—*A. H. Mackay*.

9019. BACKMAN, E. LOUIS, ET ALLAN BESKOW. Action de l'extrait d'Amanita mappa sur la constitution du sang chez le lapin. Cause de la mort dans l'intoxication par l'agaric des mouches. [Action of extract of *A. mappa* on the composition of rabbit blood. The cause of death in poisoning by the fly agaric.] *Compt. Rend. Soc. Biol.* 93: 193-197. 1925.—Death from *Amanita* poisoning comes on very slowly and the symptomatology leads to the conclusion that it is due to an alteration in the bone marrow which results in alterations in the production of thrombocytes.—*Oran Raber*.

9020. BENTLEY, O. B., AND J. E. DRIVER. A textbook of pharmaceutical chemistry. xi + 456 p. Oxford University Press, 1925.—In this text, written for pharmaceutical students, part 1 deals largely with inorganic substances of the British Pharmacopoeia and organic salts of metals. Part 2 comprises a systematic account of organic chemistry, including a number of useful methods for preparation of organic compounds, assay of alkaloidal drugs and their preparations and tests for impurities. An appendix contains tables for identification of certain inorganic compounds, a scheme for the identification of certain organic compounds, a classified list of quantitative estimations and a list of approximate atomic weights. Throughout the work, particular emphasis is given to important official chemical substances and preparations.—*H. W. Youngken*.

9021. BERRY, P. A. The aldehydes present in the essential oil obtained from *Eucalyptus cneorifolia*. *Trans. Roy. Soc. South Australia* 49: 299. 1925.—The author was unable to confirm the presence of phellandral in any aldehyde fraction from *Eucalyptus cneorifolia*, as claimed by Penfold.—*Geoffrey Samuel*.

9022. BOHRISCH. Kakao und seine Prüfung auf Reinheit. [Cacao and tests determining its purity.] *Schweiz. Apoth. Zeitg.* 62: 133-138, 154-156, 164-167, 196-198, 205-207. 1924.—The author gives a list of the common adulterants and how they are detected; he goes into detail in describing what a pure cacao powder consists of, and how the various determinations, for example, the amount of fat, its melting point, saponification value, the amount of ash, the amount of theobromine, etc., are determined.—*Charles C. Platt*.

9023. BOOTHBY, WALTER M., AND LEONARD G. ROWNTREE. Drugs and basal metabolism. *Jour. Pharm. and Exp. Therap.* 22: 99-108. 1 fig. 1924.—The common drugs in moderate doses, with the exception of iodine and the iodides, have no marked effect upon the basal metabolic rate. Adrenalin, insulin and thyroxin, however, do increase the metabolic rate, although the calorogenic action of insulin is purely secondary to the mechanism which arrests the fall of the blood sugar level in hypoglycemia.—*David McC. De Forest*.

9024. BRISSEMORET, A. Note sur les plantes anti-opium. [A note on anti-opium plants.] *Compt. Rend. Soc. Biol.* 93: 1341-1343. 1925.—It has been known that *Combretum sundaicum*, *Mitragyna speciosa*, *M. diversifolia* and *M. parvifolia* are used in certain regions to break the opium habit. The writer adds to this list *Leontice leontopetalon* and *Berberis vulgaris*, which possess this same virtue.—*Oran Raber*.

9025. BROOM, W. A., AND A. J. CLARK. The standardisation of ergot preparations. *Jour. Pharm. and Exp. Therap.* 22: 59-74. 8 fig. 1924.—The action of ergot alkaloids in paralysing motor sympathetic endings in the isolated uterus of rabbits can be made the basis of a convenient method for standardising ergot preparations; the method measures only the alkaloidal content and is not affected by the presence of amines such as histamine and tyramine.—*Author*.

9026. BRUNNER, C. Afrolicania als Stammpflanze der NICO-Nüsse. [Afrolicania as the source-plant of nikko nuts.] *Notizbl. Bot. Gart. Mus. Berlin-Dahlem* 8: 188. 1922.—The source-plant of the nikko nuts, imported for their oil from Liberia and elsewhere in tropical western Africa, is shown to be the recently described *Afrolicania elaeosperma*.—*F. W. Pennell*.

9027. CASPARIS, P. Ueber einen in Handel befindlichen falchen Aconit. [A spurious Aconite found in commerce.] *Schweiz. Apoth. Zeitg.* 62: 3-6, 15-17. 1924.—This spurious drug, microscopically closely resembling the official, can be recognized by its color and general appearance. The author is confident that it is *Aconitum fischeri* growing in Japan. Since it cannot be distinguished microscopically from the official, the author emphasizes the importance of the apothecary pulverizing his drugs himself.—*Charles C. Plitt*.

9028. CONGRÈS NATIONAL DE LA CULTURE DES PLANTES MÉDICINALES. Deuxième congrès national de la culture des plantes médicinales. [Second national congress on the cultivation of medicinal plants]. 110 p. L. Declume: Lons-le-Saunier, 1922.

9029. CRILE, GEORGE W., AMY F. ROWLAND, AND S. W. WALLACE. Bio-physical studies of the effects of various drugs upon the temperature of the brain and the liver. *Jour. Pharm. and Exp. Therap.* 21: 429-442. 6 fig. 1923.—The effects of strychnin, morphin, sodium bromide, curare, atropin, caffein and alcohol are discussed, the effect of adrenalin being used as a standard of comparison.—*David McC. De. Forest*.

9030. DAVY, J. BURTT. Poisonous plants and the livestock industry. *Kew Bull.* 1925: 37-40. 1925.—A general article dealing with conditions in the Union of South Africa.—*T. J. Fitzpatrick*.

9031. DENK, WOLFGANG. Über Futterschädlichkeiten aus der Familie der Gramineen und Liliaceen. [Harmfulness of feed from the families of Graminae and Liliaceae.] Doctor's dissertation from Hyg. Inst., Veterinary High School Dresden. 62 p. 1925.—This is a compilation of the known facts in regard to the poisonous properties of certain members of the grass and lily families. Of the grasses, *Lolium temulentum* is treated in considerable detail, giving the botanical and toxicological characteristics with a résumé of the experimental work and data in regard to animals poisoned and their treatment. In a briefer way the author treats of sorghum, Paspalum, and mentions *Nardus stricta*, and species of *Stipa*, *Aristida*, *Hordeum*, and *Aristida congesta*. Of the lilies, *Colchicum autumnale* is discussed in an extended style. Other lilies briefly treated are *Convallaria majalis*, *Polygonatum multiflorum*, *Allium cepa*, and *Paris quadrifolia*. The dissertation is a compilation, with no account of original work.—*C. D. Marsh*.

9032. DIRECTOR OF THE IMPERIAL INSTITUTE. The seeds of *Citrullus vulgaris* as a source of oil. *Bull. Imp. Inst. Gr. Brit.* 23: 149-157. 1925.—Seed samples of a number of varieties of watermelon from different parts of tropical Africa were analyzed. It was found that they produce a valuable oil which could be used as a substitute for cotton-seed oil for nearly every purpose. The residual meal is rich in proteins and is of value as a feeding-stuff.—*L. A. Kenoyer*.

9033. DOMIN, K. Léčivé rostliny. Přehled nejdůležitějších domácích a cizích léčivých bylin a rostlinných drog. [Medicinal plants. The principle plant drugs.] *Zyl. ot. z Dila, „Přírodní Léčba a Domáčekář“* p. 1-110. Nákl. Vlastním., Praha, 1923.—The author publishes a list of 350 diverse species of medicinal plants, describes them briefly, indicates their geographical distribution and method of collection, and describes the official parts. In the introduction a precise history is given of the culture of medicinal plants, with remarks on their cultivation and drying.—*From abst. in Preslia (transl.)*.

9034. DUMONT, T. *Plantes a parfum*. [Plants having perfume.] *Prog. Agric. et Vitic.* 84: 447-452. 1925.—Lavander, commercial production.
9035. DUMONT, T. *Plantes médicinales*. [Medicinal plants.] *Prog. Agric. et Vitic.* 84: 501-503. 1925.—*Tilia platyphylla* and *T. sylvestris* are discussed.
9036. EMANUEL, E. *Atractylis gummifera* L. *Schweizerische Apotheker Zeitung* 63: 234-235. 1925.—The author supplements the article of P. Casparis in *Ibid*, p. 121, and calls attention to several cases of poisoning caused by eating either the mastic-like secretion of the plant, the roots, or a decoction of the roots. The idea that the plant bears some reputation as a remedy for making the hair grow, the author explains as follows: It is the root of *Saponaria* that is wanted and as the roots of *Atractylis* resemble those of *Saponaria*, although larger, they are at times collected instead. Two girls, wishing to use the root of *Atractylis* to make the hair grow, drank the decoction, causing their death—*Charles C. Platt*.
9037. FACHINI, S. *L'industrie Italienne de l'huile de pépins de raisin*. [The Italian industry of grape seed oil.] *Prog. Agric. et Vitic.* 75: 234-235. 1920.
9038. FAES, H. *La culture indigène du pyrèthre* (*Pyrethrum cinerariaefolium*.) *Prog. Agric. et Vitic.* 78: 394-400. 1922.
9039. FINCKE, HEINRICH. *Kleine Beiträge zur Untersuchung von Kakaobohnen und Kakaoerzeugnissen*. (III Mitteilung.) [Brief reports of investigations of cacao-beans and cocoa substitutes.] *Zeitschr. Untersuch. Nahrungs- u. Genüßmittel* 50: 205-220. 12 fig. 1925.—Continuation of investigations previously reported (see Bot. Absts. 14, Entry 9314).—*E. E. Stanford*.
9040. FINCKE, HEINRICH. *Über die polarimetrische Bestimmung von Saccharose und deren Gemischen mit Lactose und anderen Zuckerarten in Kakaoerzeugnissen, kondensierter Milch und Zuckerwaren*. [Polarimetric determination of saccharose and its mixtures with lactose and other sugars in cocoa products, condensed milk, and sugar products.] *Zeitschr. Untersuch. Nahrungs- u. Genüßmittel* 50: 351-365. 3 fig. 1925.
9041. GATES, F. C. *The loco weed and its effect on live stock*. *Kansas Agric. Exp. Sta. Circ.* 115. 1-4. 1925.—A description of the plant, method of extermination, cause of poisoning, animals affected and their treatment are given.—*L. E. Melchers*.
9042. GRIEBEL, C. *Ergebnisse der Untersuchung von Heilmitteln und Geheimmitteln, kosmetischen und ähnlichen Mitteln* (13. Fortsetzung). [Results of investigations of medicinals, proprietaries, cosmetics, etc. 13th report.] *Zeitschr. Untersuch. Nahrungs- u. Genüßmittel* 50: 374-378. 1925.—Reports of apparent composition of 41 samples of named German proprietaries.—*E. E. Stanford*.
9043. HARDIKAR, S. W. *The action of quinine on protein metabolism, respiratory exchange and heat function*. II. *Respiratory exchange and heat function*. *Jour. Pharm. and Exp. Therap.* 25: 175-218. 2 fig. 1925.
9044. HAUPTVOGEL, H. *Über Ölgewinnung unter besonderer Berücksichtigung der warmen Länder*. [Oil production with special consideration to warm countries.] *Tropenpflanzer* 28: 98-102. 1925.—It is often the custom to send seed or fruits to large oil factories in Europe or America, but cost of transportation of the seed is higher than that of the oil. In the U. S. A., oil is obtained with modern machinery not available in the tropics. The use of by-products as food for cattle is of much importance in northern climates. The production of oil in the tropics is described. The methods of extracting are still too little known, whereas pressing out the oil is generally practiced. Manufacturing oil from the oil palm (*Elaeis guineensis*) has to take place near the spot where grown. As its oil would lose much of its quality, fruits of this palm can not be transported long distances.—*J. C. Th. Uphof*.
9045. HEATHCOTE, REGINALD ST. A. *The pharmacological action of cryptopine*. *Jour. Pharm. and Exp. Therap.* 25: 35-45. 3 fig. 1925.—In general, the action of cryptopine is depressant and paralyzing and is rather slight compared with that of papaverine which has a stimulating action on the toad. The dilation of the pupil which has been noticed in mammals occurs only in the late stages of systemic poisoning.—*David McC. De Forest*.
9046. HOUSSAY, B. A., ET E. A. MOLINELLI. *Action de la nicotine, de la cytosine, de la lobeline, de la conicine, de la pipéridine, et de diverses bases d'ammonium sur la sécrétion de l'adrénaline*. [Action of nicotine, cytosine, lobeline, conicine, piperidine, and various am-

monium bases on the secretion of adrenalin.] *Compt. Rend. Soc. Biol.* 93: 1124-1126. 1925.—These substances all produce an active discharge of adrenalin.—*Oran Raber.*

9047. JACKSON, R. F. Levulose production and the dahlia. *Florists' Exchange* 55: 1008. 1923.—The relative advantages of the artichoke and the dahlia as sources of levulose and inulin are briefly set forth.—*F. F. Weinard.*

9048. KALAW, M. M., AND F. M. SACAY. Some alleged Philippine poison plants. *Philippine Agric.* 14: 421-427. 1925.—A list of poisonous plants found in the Philippine provinces of Batangas and Bulacan is given. The plants are arranged according to families; and the nature of the poison when known (especially when due to hydrocyanic acid or saponin), the parts of the plant in which the poison occurs, the symptoms and effects, and the known remedies are included. A bibliography of literature on poisonous plants of the Philippines is added.—*E. B. Matzke.*

9049. KALLENBACH, F. Eine Satanspilzvergiftung? Wie stelle ich einwandfreie und gefahrlose Versuche über die Geniessbarkeit von Pilzen an? [A case of poisoning by *Boletus satanas*? How can safe and reliable tests of the edibility of mushrooms be made?] *Zeitschr. Pilzkunde* 5: 96-101. 1925.

9050. KANNIESER, F. Giftigkeit der Robinia pseudacacia. [Toxicity of *R. pseudacacia*.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 319. 1925.—Poisoning due to the use of leaves, bark and seed of the plant is known. The writer questions whether the use of its flowers in cakes has any harmful effect.—*J. C. Th. Uphof.*

9051. KANNIESER, F. Giftigkeit des Cytisus laburnum. [Toxicity of *Cytisus laburnum*.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 319. 1925.—The smoke of *Cytisus laburnum* leaves has narcotic effects.—*J. C. Th. Uphof.*

9052. KIEFER, HANS. The active constituents of Cape aloes. *Pharm. Jour.* 115: 385-395. 1925.—The author investigated Cape aloe physiologically and chemically. He states that in the making of extract of aloe according to the Swiss Pharmacopoeia, the bulk of the active constituents does not pass into the extract but remains in the insoluble residue which is rejected under the impression that it is inactive. Cape aloe appears to have the following composition: 2 possibly identical, very active, bright yellow resins, soluble in solution of sodium bicarbonate, about 30% of each; a very active resin, soluble in solution of sodium carbonate, 6-8%; aloin, slightly active, 5%; emodin, slightly active, 1.5-1.8%; water-soluble substances, inactive, 15-20%; amorphous substances producing abdominal pain, but not purgation, 5-10%.—*E. N. Gathercoal.*

9053. KROEBER, LUDWIG. Bildet die Bestimmung der Anthrachinone ein zuverlässiges Kriterium für die Wertermessung der Rheumdrogen? [Is the determining of anthraquinone a reliable criterion in the evaluation of Rheum-drugs?] *Schweiz. Apoth. Zeitg.* 61: 221-223, 234-237, 241-244. 1923.—The judging of rhubarb depends upon the determination of its taste and odor, upon the amount of extract and ash, and lastly upon the quantitative determination of anthraquinone derivative, to which one ascribes its action. In order to determine the anthraquinone derivatives the following methods are used: colorimetric (Tschirsch, Warin), spectro-analytical, precipitation (Tschirsch and Edner), or the gravimetric (Daels, E. Richter). It was found that anthraquinone content and effect do not parallel each other; furthermore, removal of anthraquinone does not in any way change the action of the drug. The author concludes that chemical valuation of anthraquinone drugs will lead to false conclusions as regards their pharmacodynamic effects.—*Charles C. Plitt.*

9054. LENDNER, A. Les landes et l'exploitation de la résine du Pinus Pinaster Solander. [Waste land and the production of the resin of *P. Pinaster*.] *Jour. Suisse Pharmacie* 62: 252-256, 267-269. 1924.—New plantations of this pine are brought about either by planting seed or by transplantation, more frequently by the latter method. When the trees have attained a circumference of 0.50 cm. or even before, towards the 15th year, they are tapped, which operation is kept up until the tree reaches an age of about 60 years when it is cut down. A tree gives about 3 liters of oleoresin a year. Trees on the border of the forest and on the side of the ocean yield most. The oleoresin is distilled and separates into colophony and spirit of turpentine. The cultivation of the oleoresin is a source of wealth for France, more than 800,000 ha. being planted with pines yielding each year about 60,000 tons of oleoresin. The

author concludes with a study of the germination of the young pine, and the microscopic structure of some of its tissues.—*Charles C. Plitt.*

9055. MACHT, DAVID I. A pharmacodynamic analysis of the cerebral effects of atropine, homatropin, scopolamin, and related drugs. *Jour. Pharm. and Exp. Therap.* 22: 35-48. 2 figs. 1924.

9056. MARGAILLAN, L. AVEC LA COLLABORATION DE MM. GONTARD, MARTIN, A. MOITESSIER, ET MLES. BLAQUIER, CORRIERAS, MEYER, G. MOITESSIER, ET NEYRET. Étude chimique de quelques graines oléagineuses de pays chauds et, en particulier, des Colonies Françaises. [Chemical study of certain oily seed of warm countries, particularly of French Colonies.] *Ann. Mus. Colonial Marseille 4^e sér.* 3²: 5-20. 1925.

9057. MARR, H. V. The therapeutic properties of Australian sandalwood oil. *Australian Forest Jour.* 8: 180-182. 1925.—The therapeutic properties of sandalwood oil, produced from *Santalum cygnorum* by a modified process, is compared with that from *S. album*. The author claims that oil from the former species has equal antiseptic properties, can be administered continuously and does not produce unpleasant physiological after effects.—*C. F. Korstian.*

9058. MARTELL, P. Vanille und Vanillin. [Vanilla and vanillin.] *Zeitschr. Untersuch. Nahrungs- u. Genussmittel* 50: 415-420. 1925.—The author discusses the source, cultivation, commercial varieties, principal constituent and uses of Vanilla grown in Mexico. Vanillin is claimed to be lodged chiefly in the elongated end of the bean and occurs in amounts of 0.6-2.9% in Mexican vanilla. Java and Reunion vanillas yield 2.75-2.9% vanillin and Tahiti 0.6-0.7% vanillin. Guadeloupe vanilla contains the least vanillin, due to lack of care in planting and curing. Synthetic vanillin has the advantage over the natural product in that it does not darken upon ageing and is uncontaminated.

9059. MARZELL, HEINRICH. Unsere Heilpflanzen und ihre Stellung in der Volkskunde. [Our medicinal plants and their place in folk lore.] *Ethnobotanische Streifzüge.* xviii + 240 p. Theodor Fisher: Freiburg im Breisgau, 1922.

9060. MICHIELS, ET LEROUX. Étude d'une drogue congolaise et son alcaloïde suivie de quelques observations sur la Gelsémine et l'Yohimbine. [Study of a Congo drug and its alkaloid with observations on gelsémine and yohimbine.] *Bull. Acad. Roy. Med. Belgique* 1925: 403-417. 1925.—The authors find it impossible to determine exactly a plant from the northwest of Lake Kivu to Bobandana, but give a summary diagnosis of the leaves and stipules, inflorescence, constituents, etc. The bark contains tannin, resin, a crystallizable alkaloid and an amorphous alkaloid. The authors conclude with remarks on gelsémine and yohimbine and general information on active constituents of some other Rubiaceae.—*E. DeWildeman (transl.).*

9061. MILLER, T. GRIER. A consideration of the clinical value of ephedrin. *Amer. Jour. Med. Sci.* 170: 157-181. 1925.—Ephedrin, an active principle isolated from the Asiatic drug *Ephedra vulgaris* var. *helvetica*, is found to have general physiological effects similar to those produced by epinephrin. The author believes that it will be found useful in the treatment of asthma and of acute circulatory depression and in the management of certain congestive nasal conditions.—*David McC. De Forest.*

9062. MITCHELL, CHARLES AINSWORTH. The distillation of the essential oils of flowers and herbs. 8 p. Carrick: Tamworth, England, 1924.

9063. MOLLOY, DANIEL M. Notes on the pharmacology and therapeutics of oil of chenopodium and investigations on the anthelmintic value of its components. *Jour. Pharm. and Exp. Therap.* 21: 391-400. 1923.

9064. MOURRE, CHARLES. La lavande française, sa culture, son industrie, son analyse. [French lavender, its cultivation, industry, and analysis.] 150 p. Gauthier-Villars et Cie.: Paris, 1923.

9065. PATER, B. Cultura Mătrăgunii. (*Atropa Belladonna* L.) [Culture of belladonna.] *Buletinul Agric.* 6: 3-19. 4 fig. 1925.

9066. PATER, B. O plantă prețioasă, dar puțin cunoscută. [A valuable but little known plant.] *Viața Agricolă* 16: 87-88. 1925.—The author, cultivating *Malva glabra* Desv. for the first time in Rumania (Cluj), publishes results promising a good growth of this plant in many parts of Rumania.—*Emil Pop.*

9067. PATER, B., ET I. S. FLEXOR. *La culture des plantes medicinales en Roumanie.* [The culture of medicinal plants in Roumania.] Min. Agric. et Domaines, Direction des Publications: Bucharest, 1925.

9068. PENFOLD, A. R. Note on the non-existence of the supposed aldehyde "cneoral." Trans. and Proc. Roy. Soc. South Australia 49: 298. 1925.—Berry's contention (Ibid. 1922) that a new aldehyde, cneoral, exists in the essential oil of *Eucalyptus cneorifolia* is combatted. The writer claims that 3 aldehydes only, cuminal, phellandral and cryptal, exist in the oil of this species, and that the names "aromadendral" and "cneoral" should be deleted from the literature, these being merely mixtures of phellandral with cuminal or cryptal.—*Geoffrey Samuel.*

9069. PENFOLD, A. R. The essential oils of *Callistemon lanceolatus* and *C. viminalis*. Jour. and Proc. Roy. Soc. New South Wales 57: 131-139. 1923.

9070. PETTINARI, V. Sulla emolisme dei funghi. [The Hemolysin of Mushrooms.] Arch. Farmacol. Sper. Sci. Aff. [Roma] 39: 162-173. 1925.—The author finds that the hemolysin of *Amanita phalloides* is not a specific toxin, since other mushrooms possess it. The hemolysin can be extracted from the cutex, the gills, and the stipe. It diminishes upon drying and its introduction by mouth has no effect on experimental animals.—*L. A. J. (Contrib. by Absts. Bact.).*

9071. PICCININI, P. La stabilizzazione delle piante medicinali. [The standardization of medicinal plants.] 16 p., 2 fig. Federazione Pro Montibus no. 148. Comitato Nazionale per le Piante Medicinali, Aromatiche ed Estrattive in Statia e Colonie, Roma, 1923.—The author advocates new legislation for protection of medicinal plants and a method of standardization for such as would not only give the drugs a uniform and dependable action but would give the physician an infallible base in therapeutics and posology. Standardization should be done immediately after gathering and preferably on the same spot. He describes a contrivance with which he has experimented in his effort to devise a method which will not alter the structure of the plant or destroy the active principle.—*J. Cianciarulo.*

9072. PLÜCKER, W., AD. STEINRUCK, UND FR. STARCK. Untersuchungen über Kakao. I. Nachweis von Schalen. [Cocoa investigations. I. Determination of shells.] Zeitschr. Untersuch. Nahrungs- u. Genussmittel 50: 307-315. 1925.—The percentage of insoluble phosphoric acid in total phosphoric and the iron-content in cocoa may vary with methods of manufacture and by some methods both may be increased. Crude fiber determinations and percentage of insoluble phosphoric acid in total phosphoric give no certain indication of adulteration of cocoa with shells. Microscopic investigation gives a correct insight only by quantitative counting of the stone-cells, for which process a method is described.—*E. E. Stanford.*

9073. POULSSON, E[DWARD]. A text-book of pharmacology and therapeutics. English ed. edited by W. E. DIXON. xi + 519 p. W. Heinmann: London, 1923.

9074. PUGA BORNE, FEDERICO. El chuño de ligtu. [The "chuño" of ligtu.] Rev. Chilena Hist. Nat. 25: 313-320. 1 pl., 1 fig. 1921.—"Chuno de ligtu," a starch extracted from roots of *Alstroemeria ligtu*, is of such value both for food and medicine that it should be universally known. The method of its preparation and therapeutic use is carefully described, the author referring to earlier articles of his own and of R. A. Philippi.—*F. W. Pennell.*

9075. ROHDE, E. S. A garden of herbs: a practical handbook to the making of an old English herb garden, together with numerous receipts from authorities. 241 p. Johnathan Cape: London, 1922.

9076. ROSENTHALER, L. Beiträge zur Blausäurefrage. 16. Ueber die Bestimmung der Blausäure in lebendem Material. [Contributions upon the hydrocyanic acid question. 16. Determination of hydrocyanic acid in living material.] 17. Zur Darstellung der Kirschchlorbeerwassers. [17. Preparing cherry laurel water.] Schweiz. Apoth. Zeitg. 62: 705-708. 1924.—The author shows that the only way to get proper results on the amount of hydrocyanic acid in living plants is to kill all the cells before making this assay. He reviews the work he has already done with cherry laurel leaves, making correction where necessary.—Following the results of his studies, the author would prepare cherry laurel water by throwing the leaves, immediately after cutting them into strips, into boiling water, leaving them there for some time. The leaves are then cut fine and thoroughly cooked in the same water. When cold,

emulsion, prepared from cherry laurel leaves as a cold watery extract, is added. Further preparation follows the usual way.—*Charles C. Plitt.*

9077. ROSENTHALER, L. I. Unterscheidung von Aloësorten mit Bromwasser. [1. Distinguishing aloes with bromine water.] Schweiz. Apoth. Zeitg. 61: 640. 1923.—The author notes behavior of this reagent upon Cape, Caracao, Uganda, Natal and Socotrine aloes.—*Charles C. Plitt.*

9078. ROSENTHALER, L. 4. Zur Kenntnis von Traganth und Gummi. [Tragacanth and gum arabic.] Schweiz. Apoth. Zeitg. 62: 221-224. 1924.—The author notes a number of distinguishing features of these 2 substances.—*Charles C. Plitt.*

9079. ROSENTHALER, L. 6. Zur Kenntnis der Traganths. [6. Tragacanth.] Schweiz. Apoth. Zeitg. 62: 632-635. 1924.—The author determines (a) the amount of nitrogen in several sorts of tragacanth and (b) notes the color reaction of these with H_2SO_4 . Good kinds of tragacanth can be distinguished from the poorer by their behavior when treated with H_2SO_4 , giving no reaction within a minute, becoming a clear brown in an hour. The author in same article describes Patta-Pektin, a substance that has come into the market as a substitute for tragacanth.—*Charles C. Plitt.*

9080. ROSENTHALER, L. 7. Zur Wertbestimmung des schwarzen Senfs. [7. The valuation of black mustard.] Schweiz. Apoth. Zeitg. 62: 508-510, 519-522. 1924.—The first operation in determining the value of black mustard is to treat the powdered seed with water. When, under the influence of water, sinigrin is decomposed by the myrosin, one of the products is volatile oil of mustard. It has long been known that the amount of volatile oil obtained is dependent upon length of time of maceration of the ground seed. The author attempts to find out the cause of the phenomenon. His conclusions are that water decomposes the volatile oil after it is formed, it can be traced back to some biochemical cause (probably bacteria), and it can be prevented to some extent by addition of boric acid.—*Charles C. Plitt.*

9081. SANTA CRUZ, ALCIBIADES. Plantas medicinales de la región de Concepción [Medicinal plants of the region of Concepción.] Rev. Chilena Hist. Nat. 25: 241-252. 1921.—This is an enumeration of medicinal plants of the region of Concepción, Chile, with a statement of the therapeutic use of each.—*F. W. Pennell.*

9082. SAVOIR. La variabilité des plantes. [The variability of plants.] Naturaliste Canadien 52: 5-6. 1925.—Comments on the experiments by M. Maurin, lately presented to the "Société de Médecine de Toulouse," on the effect of different fertilizers in modifying the amount of alkaloids developed in *Datura stramonium*, the superphosphate of lime and the sulphate of lime increasing the percentage $\frac{1}{4}$, and the sulphate of potassium diminishing the amount.—*A. H. MacKay.*

9083. STEJSKAL, W. Der Wert des Satanspilzes. *Boletus satanas* Lz. [Edibility of *B. satanas*.] Zeitschr. Pilzkunde 5: 89-95. 1925.—The controversy over the edibility of *B. satanas* is reviewed, the general conclusion being that there is considerable evidence of its harmlessness and excellent flavor when cooked with salt and without water.—*F. Weiss.*

9084. TEIXEIRA DA FONSECA, EURICO. Huile ou baume de copahu (oleo de copahyba) [Copahyba balsam.] 8 p. Imprensa Nacional: Rio de Janeiro, 1923.—Information is given on the Brazilian production and exportation of copahyba balsam from *Copaifera* spp.—*W. N. Sparhawk.*

9085. TÖLLNER, KARL FR. Taxus eine Giftpflanze. [Taxus a poisonous plant.] Mitteil. Deutsch. Dendrol. Ges. 35: 333. 1925.—In a meadow near Ovelgönne, Oldenburg, three weeks old dried Taxus twigs were eaten by calves. Death resulted.—*J. C. Th. Uphof.*

9086. TSCHIRCH, A. Die Stammpflanze der chinesischen Rhabarber. [The stock-plant of Chinese Rhubarb.] Schweiz. Apoth. Zeitg. 61: 589-593, 625-629, 637-639, 671-673. 1923.—The author describes in detail the region in which *Rheum tanguticum* = *Rh. palmatum* v. *tanguticum* grows, the extent of its distribution, and how it is dried for the market. This is followed by a discussion of the identity of *R. palmatum*, *R. tanguticum* and *R. officinale*. These and *R. Emodi*, *R. rhaponticum*, *R. collinianum*, and *R. undulatum*, the author cultivated and notes 4 distinct groups. In (1) is *R. undulatum*, cultivated in our gardens and stalks of which are eaten. In (2) are placed *R. rhaponticum* and *R. emodi*. The 1st species is the source of English, French, and Austrian rhubarb. It does not form tubers. In (3) is *R. officinale*, the rhu-

barb of the southern region of China. In (4) is *R. palmatum*, the rhubarb of the northern region, the stock plant of the more valuable drug, distinguished from the other rhubarbs by its deeply divided leaves. Here are placed *R. tanguticum*, *R. palmatum v. tanguticum*, and *R. palmatum*, all sufficiently closely related to describe them all under *R. palmatum*, were it not shown that *R. tanguticum* under further cultivation showed itself a hybrid. The problem is to find the homozygote generation having genes for white and lobed leaves which the author would call *R. palmatum genuinum*, a plant as yet unknown to us. Since *R. officinale* is of less value, pharmacopoeiæ should designate *R. palmatum* and hybrids with deeply-lobed leaves—in other words *Rheum* spp. of the palmatum group.—*Charles C. Plitt*.

9087. VALENTI, A., F. CORTESI, E E. CARLINFANTI. Codice per il riconoscimento ed il controllo delle piante medicinali. Parte prima. Piante medicinali italiane. [Codex for the recognition and control of medicinal plants. Part one. Italian medicinal plants.] 101 p., 40 pl. Federazione pro Montibus: Rome 1925.—The editors give considerable information on the characteristics, habitat and parts used of a number of the most important of the Italian medicinal plants, including observations on their harvesting, commercial standards, constituents, assays, adulterations and preparations. Several assay methods are listed in the appendix.—*J. Cianciarulo*.

9088. WALLIS, T. E. Practical pharmacognosy. 125 p., 81 illus. Churchill: London, 1925.

9089. WALLIS, T. E., AND ELLINOR J. MOWAT. True and false santonicas. Pharm. Jour. 115: 149-156. 11 fig. 1925.—The authors examined a large number of species of *Artemisia* belonging to the section *Seriphidium* and present features which are useful in distinguishing between nearly related species, including characters by which the flower-heads of genuine *santonica* of commerce can be identified with certainty.—*E. N. Gathercoal*.

9090. WANDER, G. The "Hesperidin" of some plants. Pharm. Jour. 115: 520. 1925.—The author reviews the history of hesperidin and allied substances and describes the technique he employed in isolating substances resembling hesperidin from a diverse series of plants.—*E. N. Gathercoal*.

9091. WARTH, F. J. A note on the hydrocyanic acid in the Burma bean (*Phaseolus lunatus*). Mem. Dept. Agric. India. Chem. Ser. 7: 1923.

9092. WASICKY, R. Die Wertbestimmung von Filix mas. [The valuation of Filix mas.] Schweiz. Apoth. Zeitg. 62: 601-603, 613-615. 1924.—The important constituents of *Aspsidium filix-mas* are filicic acid, aspidinol, phloraspin, filmaron. The author by means of several biological assays and by chemical assay shows the lack of parallelism in the results. He concludes that each new extract should be studied first chemically, then assayed biologically and notes taken as to how far the 2 methods tally. No preparation should be used without previous chemical or biological and then clinical analysis.—*Charles C. Plitt*.

9093. [WODEHOUSE, R. P.] Plants which cause hayfever. The Arlington Chemical Co.: Yonkers, New York, 1925.—Any plant that sheds pollen may be regarded as a potential cause of hayfever. Only these, however, that shed copious amounts of pollen which is light and wind borne may constitute an important factor in hayfever. The plants which actually cause hayfever are, in the majority, confined to the families Gramineae, Chenopodiaceae, Amaranthaceae, Ambrosiaceae and Carduaceae. Outside of these 5 families the most important hayfever plants are *Plantago lanceolata* and several species of *Populus*. Figures are given illustrating in minutest detail the characteristics of pollen grains of representative species from each of the families enumerated. These figures show that nearly related plants have pollen grains similar in character. A plea is made for the use of the binomial system of nomenclature in preference to the loose and inconsistent use of vernacular names now prevalent in hayfever literature.

PHYSIOLOGY

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See also in this issue entries, 5849, 5906, 5983, 5995, 6009, 6024, 6106, 6168, 6181, 6185, 6336, 6376, 6479, 6498, 6538, 6642, 6754, 6759, 6822, 6902, 6904, 6919, 6946, 6965, 7149, 7162, 7257, 7349, 7473, 7601, 7633, 7688, 7698, 7789, 8044, 8045, 8074, 8105, 8202, 8220, 8230, 8271, 8278, 8280, 8290, 8302, 8312, 8320, 8321, 8333, 8347, 8351, 8354, 8358, 8359, 8394, 8411, 8416, 8418, 8475, 8518, 8573, 8623, 8708, 8717, 8739, 8743, 8769, 8794, 8859, 8870, 8873, 8882, 8885, 8963, 8999, 9023, 9043, 9045, 9047, 9055, 9061, 9063, 9636)

GENERAL

9094. ABDERHALDEN, EMIL. *Handbuch der biologischen Arbeitsmethoden. Abt. I. Chemische Methoden. Teil 7. Spezielle analytische und synthetische Methoden. Heft 1. [Handbook of biological methods, Division I. Chemical methods. Part 7. Special analytical and synthetic methods.]* 262 p. Urban & Schwarzenberg: Wien, 1922.

9095. ABDERHALDEN, EMIL. *Handbuch der biologischen Arbeitsmethoden. Lieferung 113. Abt. II: Methoden der Erforschung der Leistungen des Pflanzenorganismus. Teil 1. Heft 5: Allgemeine Methoden. Methoden der Pilzinfektion. [Handbook of biological methods. Modes of fungous infection.]* By H. KLEBAHN. P. 515-688. Urban und Schwarzenberg: Berlin und Wien, 1923.

9096. ABDERHALDEN, EMIL. *Synthese der Zellbausteine in Pflanze und Tier: zugleich ein Beitrag zur Kenntnis der Wechselbeziehungen der gesamten Organismenwelt. [Synthesis of cell constituents in plants and animals: the interrelations of living organisms.]* 2nd ed. v + 61 p. J. Springer: Berlin, 1924.

9097. ARTHUS, M. *Précis de physiologie microbienne. [Principles of the physiology of microorganisms.]* 407 p. Collection de Précis Médicaux. Masson & Cie: Paris, 1922.

9098. BENECKE, WILHELM., UND L. JOST. *Pflanzenphysiologie. [Plant Physiology.]* G. Fischer: Jena, 1924.

9099. BOJANOWSKY, R. *Zweckmäßige Neuerungen für die Herstellung eines Kiesel-säure-Nährbodens und einige Beiträge zur Physiologie aerober Zelluloselöser. [Appropriate changes in the preparation of a silicic acid medium and some contributions to the physiology of cellulose decomposing bacteria.]* Centralbl. Bakt. II. Abt. 64: 222-233. 1925.—After reviewing the various methods suggested for preparing silica gel, the author outlines the colloid chemical principles underlying the process of gel formation and a new method of preparation. This method consists in adding to 31 cc. HCl, Sp. G. 1.185, 12.5 cc. of commercial water glass diluted with 56.5 cc. of water. The mixture is dialyzed, using a folded parchment filter placed in a funnel, and the outflow of water is controlled by a rubber connection and pinch cock at the lower end of the funnel. The 2nd half of the dialysis is carried out by means of distilled water. The decrease in acidity is followed by titration of the mixture. A curve is suggested with time of dialysis as abscissa and logarithm of H-ion concentration as ordinate. Dialysis is completed in about 8 hours. The mixture is placed in 10 cc. portions in tubes which are then plugged with cotton and sterilized at 120°. The nutrients are then dissolved, using 8.7 times the ordinary concentration; 1.5 cc. of the sterile nutrient solution, 1.5 cc. of saturated lime water and 10 cc. of the silicate mixture previously inoculated, are introduced into each sterile dish and well mixed. Solidification will take place in 10 minutes to 3 hours, depending on the salt content of the nutrient solution. This medium is suitable for the cultivation of algae, using Richter solution; cellulose bacteria, using Omelianski's solution; and various other bacteria and actinomycetes. The cellulose bacteria were found to form a clear zone, thus confirming the observations of Kellermann and associates and Löhnis that an ectoenzyme is formed.—S. A. W. (*Contrib. by Absts. Bact.*)

9100. EHRENBERG, R. *Theoretische Biologie vom Standpunkt der Irreversibilität des elementaren Lebensvorganges. [Theoretical biology from the standpoint of the irreversibility of the elementary life processes.]* vi + 348 p. J. Springer: Berlin, 1923.

9101. FEULGEN, R. *Die Biochemie in Einzeldarstellungen*. Herausgegeben von Aristides Kanitz. Nr. V.: *Chemie und Physiologie der Nuklein Stoffe nebst Einführung in die Chemie der Purinkörper*. [Chemistry and physiology of nuclein-containing substances and an introduction to the chemistry of purine bodies.] xii + 432 p. Gebrüder Bornstraeger; Berlin, 1923.

9102. FOLIN, O. K. *Laboratory manual of biological chemistry*. 3rd. ed. Appleton: New York, 1923.

9103. FRANCIS, W. D. A contribution to the theory of the relationship of iron to the origin of life. *Proc. Roy. Soc. Queensland*, 37: 98-107. 1926.—The original theory connecting iron with the origin of life was published by Moore and Webster in London (*Roy. Soc. Proc. B.* 87: 163, 556. 1913-1914). The paper under review contains a summary of available literature showing the significance and indispensability of iron in several organic functions, references being made to the works of Moore and Webster, N. Sacharoff, Spitzer, A. B. Macallum, G. Gola, G. B. Ray, R. Leiske, W. Pfeiffer, B. M. Duggar, Hans Molisch, and Otto Warburg. The inorganic properties of iron are considered in relationship to the elements and compounds usually regarded as essential in the functions of lower organisms and plants. The possibility of the intimate connection of iron with the origin of life is suggested by the following inorganic properties of iron or its compounds: (1) The oxidation of naturally occurring ferrous compounds or of native iron. It is suggested that some of these oxidations could provide the energy of the most primitive organisms. (2) The combination of iron with the common protein and carbohydrate elements to form compounds such as (a) iron carbides, oxides, nitrides, sulphides, and phosphides; (b) iron carbonate, hydroxides, nitrates, sulphates, and phosphates. (3) The combination of water and the fixation of carbon dioxide and ammonia by iron undergoing the rusting process. (4) The representation of or very close approximation to the colloid state by iron rust and the ability of ferric hydroxide or ferric oxide to function as principal constituents in colloids of widely different characteristics such as in suspensoids, emulsoids, positively and negatively charged colloids.—*Author*.

9104. GERTZ, OTTO. *Laboratorietekniska och mikronkemiska notiser*. 9. *Nagra iakttagelser över zonbildning i gelatin*. [Laboratory technique and microchemical notes. Zone formation in gelatin.] *Bot. Notiser* 1922: 245-256. 1922.

9105. GILTNER, WARD, AND R. M. SNYDER. *Rotation of chemical elements in agriculture*. Michigan Agric. Exp. Sta. Quart. Bull. 6: 72-74. 1 fig. 1923.—This is a brief discussion of the carbon cycle in animals and plants.—*Ernst A. Bessey*.

9106. GILTNER, WARD, AND R. M. SNYDER. *Rotation of chemical elements in agriculture*. Michigan Agric. Exp. Sta. Quart. Bull. 6: 136-138. 1 fig. 1924.—This is a discussion of the nitrogen cycle.—*Ernst A. Bessey*.

9107. HAAS, PAUL, AND T. G. HILL. *An introduction to the chemistry of plant products*. Vol. 2. *Metabolic processes*. vii + 140 p. Longmans, Green & Co.: London, 1922.—(See also *Bot. Absts.* 11, Entry 2998.)

9108. HALLIBURTON, W. D. *Handbook of physiology*. 16th ed. xx + 968 p. J. Murray: London, 1923.

9109. HARVEY, W. F. *Bacteriological and laboratory technique*. *Indian Jour. Med. Res.* 10: 613-664. 1922-1923.—This is a continuation of the author's treatise on bacteriological and laboratory technique. The present section includes methods of demonstrating bacterial activities (sugar tests, carbinol test, methyl red test, acid and alkali production, protein decomposition, chromogenic power, denitrifying power, enzyme production, gas production, hemolytic power, indole production, liquefactive power, lytic power, motility, nitrate and nitrite production, pathogenic power, phenol production, photogenic power, reproductive power, toxin production.)—*I. A. B. (Contrib. by Absts. Bact.)*

9110. HILL, A. V. The present tendencies and the future compass of physiological science: inaugural lecture at Univ. College. Oct. 16. 1923. 32 p. Univ. of London Press, Ltd. London, 1923.

9111. HOWARD, G. L. C. The rôle of plant physiology in agriculture. *Jour. Bd. Agric. British Guiana* 18: 113-127. 1925.

9112. JONG, A. W. K. DE. Colloids. Lecture at Marbau on 4th March 1925. Communi-

cat. Gen. Exp. Sta. A. V. R. O. S. Gen. Ser. 24. 1-18. 3 fig. 1925.—After discussing collection in general the author makes specific application of the subject to rubber latex, to plants and animals and to the soil.—*Frederick V. Rand.*

9113. KOLKWITZ, R. *Pflanzenphysiologie*. [Plant physiology.] 304 p. Gustav Fischer, Jena, 1922.

9114. KROHN, VAINO. The principle of the absolute optimum in comparative physiology. *Ann. Acad. Sci. Fenn. Ser. A.* 24¹⁵: 1-112. 1925.—The relative values of various factors in physiological reaction are often determined by holding all factors except one suppose equal. However, the maximum result of a given factor may not be found by this method working with all possible factors. Taking the greatest value for any given factor studied its optimum value can be determined. This physiological principle is illustrated by a nutritional study of *Bacillus thermophilus* carried out with different sugars and under different environmental conditions.—*R. Collander (transl. by Nellie M. Payne).*

9115. LEGENDRE, R. La concentration en ions hydrogene de l'eau de mer. Le k H-Méthode des de mesure; importance océanographique géologique, biologique. [Concentration of hydrogen ions in sea water. Methods of measurement; oceanographic, geologic and biological importance.] vii + 291 p., 31 fig. De Presses Univ. de France: Paris, 1925.

9116. LEPESCHKIN, WLADIMIR WASILIEVICH. *Kolloidchemie des protoplasmas*. [Colloidal chemistry of protoplasm.] xi + 228 p. J. Springer: Berlin, 1924.

9117. LIESEGANG, RAPHAEL EDUARD. Beiträge zu einer kolloidschemie des leber (Biologische diffusionen.) [Colloid chemistry of life. Biological diffusions.] 2nd ed. 39 p. T. Steinkopff: Dresden und Leipzig, 1922.

9118. LOEB, LEO. Effect of ion combinations on protoplasm, amoeboid movement, tissue formation in experimental amoebocyte tissue. *Proc. Soc. Exp. Biol. and Medicine* 23¹: 57-61. 1925.

9119. MICHAELIS, LEONOR. Die wasserstoffionen-Konzentration, ihre Bedeutung für die Biologie und die Methoden ihrer Messung. [Hydrogen ion concentration, its significance for biology, and methods of measurement.] xiii + 210 p., *Illus.*, 41 fig. J. Springer: Berlin, 1925.

9120. MOUTON, H. [Rev. of: ZSIGMONDY, RICHARD. *Kolloidchemie. Ein Lehrbuch* (Colloidal chemistry. A textbook.) 5th ed. Part I. General.) xii + 246 p. 36 fig. Otto Spamer: Leipzig.] *Bull. Soc. Chim. Biol.* 7: 1180-1182. 1925.—The clarity and absence of personal bias apparent in the presentation of recent work leads the reviewer to strongly commend the book.—*Joseph S. Caldwell.*

9121. OPPENHEIMER, KARL. *Biochemie*. [Biochemistry.] viii + 349 p. 4th ed. C. Thieme: Leipzig, 1922.

9122. REINKE, J. *Grundlagen einer Biodynamik*. [Fundamentals of biodynamics.] x + 160 p. Gebrüder Borntraeger: Berlin, 1922.

9123. ROBERTSON, THORNBURN, B. The chemical basis of growth and senescence. viii + 389 p. J. B. Lippincott Co.; Philadelphia, 1923.

9124. SARDA, J. MORRIS. Los coloides en biología. [Colloids in Biology.] *Rev. Zootec.* [Buenos Aires] 12: 34-40. 1925.—The author presents some of the theories advanced as to the relationship of colloids to physiological activities.—*H. M. (Contrib. by Absts. Bact.).*

9125. SCHOENICHEN, WALTHER. *Biologie der Blütenpflanzen, eine Einführung an der Hand Mikroskopischer Übungen*. [Biology of flowering plants—an introduction to hand microscopic exercises.] (Biologische Studienbücher. Bd. 2.) 216 p. 308 *illus.* Julius Springer: Berlin, 1924.—This handbook is designed to aid students of biology with simplest technique to carry out studies of the more important phenomena connected with flowering plants. It is divided into 5 parts. The 1st concerns the biology of roots of various types, including aerial roots, suctorial roots of phanerogamic parasites and roots with fungous or bacterial symbiosis. Succeeding parts deal with the biology of the stem; of the leaves; of the flowers, and the distribution of seed and fruits by wind, water, animals, and by devices of the plants themselves. Details are clearly brought out by the numerous illustrations.

9126. SHIVE, JOHN W. Report of the department of plant physiology. *New Jersey Agric. Exp. Sta. Ann. Rept.* 45: 275-277. 1924 (1925).—Quantitative analyses of plant tissues showed that chlorotic plants, as well as those suffering from iron toxicity, exhibit a relatively very

high iron content while normally healthy green plants show a relatively low iron content. In the chlorotic plants, however, the iron is precipitated in the roots and stems before entering the leaves, while in the normal plants it is uniformly distributed throughout the plant.—Seed weight studies are reported. It is suggested that in the case of biennials and perennials equivalent crops will result from the planting of large and small seed.—In studies with soybeans it was found that in the seedling stage the ammonium ion was absorbed much more readily than the nitrate ion. In the later stage of growth the reverse was true.—It was found that the nitrogen content of alfalfa varied considerably, the variation, in a large measure, being determined by the relative proportions of the essential salt constituents of the media. The chlorine content of alfalfa from different sections of the country was found to vary greatly.

9127. TERROINE, EMIL F., ET EDGARD ZUNG. *Le métabolisme de base*. Physiologie (Terroine). Pathologie (Zung). [Basal metabolism. Physiology. Pathology.] 185 p. 9 fig. Les Presses Univ. de France: Paris, 1925.

9128. TROLL, WILHELM. *Gestalt und Gesetz*. [Form and law.] Flora 118-119: 536-565. 1925.—The author discusses the underlying principles of morphology and physiology. He shows the relation of these 2 branches of biology to 2 distinct methods of thought. He analyses the method of Goethe and its relation to his idealistic morphology; he considers also the causal morphology of Hofmeister and Goebel, which is concerned not with ultimate causes but with the explanation of how one form is derived from another. He traces modern physiology to the method of thought of Kant and the search for ultimate causes.—A. G. Stokey.

9129. TSCHERMAK, ARMIN VON. *Allgemeine physiologie: eine systematische Darstellung der Grundlagen sowie der allgemeinen Ergebnisse und Probleme der Lehre vom tierischen und pflanzlichen Leben*. [General physiology: principles and problems of animal and plant life. Vol. 1: Principles of general physiology.] xvi + 796 p. Julius Springer: Berlin, 1924.

9130. TSCHIRCH, ALEXANDER. *Die biochemische Arbeit der Zelle der höheren Pflanzen und ihrer Rhythmus*. [The biochemical work of the higher plant cell and its rhythm.] 55 p. P. Haupt: Bern, 1921.

PROTOPLASM

9131. IWANOFF, N. N. *Über den Eiweissstoff des Protoplasmas der Myxomyceten*. [The protein of the protoplasm of Myxomycetes. Biochem. Zeitschr. 162: 441-454. 1925.—From *Reticularia Lycoperdon*, *Brefeldia maxima* and *Aethalium septicum*, a protein was obtained by hydrolysis that was soluble in water and 80-85% alcohol. It contained 16.47-16.77% nitrogen. After complete hydrolysis about half the nitrogen was precipitated by phosphotungstic acid. It contained 12.24% arginine. The plastin of Myxomycetes contained 10-12.74% nitrogen and 0.324-1.34% phosphorus. The protein content of plastin was estimated as not over 38.48%. A water soluble carbohydrate that yielded glucose on hydrolysis was present.—H. D. Hooker.

9132. LILLIE, RALPH S. *Protoplasmic action and nervous action*. (Univ. of Chicago Sci. Ser.) xiii + 417 p. Univ. Chicago Press: Chicago; Cambridge Univ. Press: London, 1923.

PERMEABILITY, PHYSICO CHEMICAL RELATIONS, COLLOIDS

9133. ADAM, N. K., AND G. JESSOP. *An explanation of the so-called intertraction phenomenon between solutions, and the molecular significance of negative surface tension*. Proc. Roy. Soc. London B 98: 206-213. 3 pl. 1925.—Intertraction or the formation of pseudopodium-like streamers at the interface of 2 liquids, described by Wright and Schoneboom as due to capillary forces, is found to occur only in special cases and to be due to local differences in diffusion rates rather than to capillarity.—P. B. Sears.

9134. BAYLISS, WILLIAM M. *Interfacial forces and phenomena in physiology: being the Herter Lectures in New York in March, 1922*. ix + 196 p. Methuen & Co.: London, 1923.

9135. BAYLISS, W. M. *The colloidal state in its medical and physiological aspects*. (Oxford Medical Publ.) viii + 95 p. H. Froude and Hodder and Stoughton: London, 1923.

9136. BUTKEWITSCH, W. S., UND W. W. BUTKEWITSCH. *Zur Frage nach der Rolle des "Donnanschen Membrangleichgewichts" bei osmotischen Vorgängen in lebenden Zellen*. [Rôle of the Donnan equilibrium in the osmotic processes of living cells.] Biochem. Zeitschr. 161: 468-487. 1925.—The Donnan equilibrium is considered to play an important part in the

absorption and distribution of diffusible ions. Experiments with collodion membranes show that silicic acid furthers the diffusion of diffusible anions, and its presence in the soil may increase phosphoric acid absorption by root cells. Increased K absorption would be affected by Na salts if the membrane were permeable to K salts and impermeable to Na salts.—*H. Hooker*.

9137. CLARKE, BEVERLY L. Abnormal absorption of potassium over sodium by the "constructed cell." Carnegie Inst. Washington [D. C.] Year Book 24: 142-143. 1925.

9138. CLARKE, BEVERLY L. Physico-chemical basis of colloidal swelling. Carnegie Inst. Washington [D. C.] Year Book 24: 140-141. 1925.

9139. DUCLAUX, JACQUES. Les colloïdes. [Colloids.] $x + 305$ p. Gauthier-Villars Co.: Paris, 1922.

9141. ECKART, HANS. Die Refraktometrie als Hilfsmittel zur Untersuchung von Fruchtsäften. [Refractometry as an aid in the investigation of fruit-juices.] Zeitschr. Untersuch. Nahrungs- u. Genussmittel 50: 196-204. 3 fig. 1925.

9142. EFFRONT, JEAN. Sur les variations du pouvoir absorbant de la levure. [Variations in the absorbing power of yeast.] Compt. Rend. Soc. Biol. 93: 1248-1250. 1925.—If yeast is cultivated so that the nutrient is added only as used, no alcohol accumulates in the solution; alcohol is used by the yeast as fast as formed. This yeast differs markedly from the normal type, and it is thought that these differences are associated with differences in permeability, the latter changing according to the mode of nutrition.—*Oran Raber*.

9143. ERISMANN, HERMANN. Beiträge zur Theorie der Bakterienfiltration. [The theory of bacterial filtration.] Centralbl. Bakt. [etc.] I Abt. 88⁴: (1-31.) 1922.

9144. FREUNDLICH, H. Kolloidchemie und Biologie. [Colloid chemistry and Biology.] Naturwissenschaften 12: 233-239. 1924.

9145. FUJITA, A. Untersuchungen über elektrische Erscheinungen und Ionendurchlässigkeit von Membranen. V. Die Eigenschaften der Membranen von amphoterem Charakter. [Properties of amphoteric membranes.] Biochem. Zeitschr. 162: 245-257. 1925.—When 2 electrolyte solutions of different concentrations were separated by an isoelectric protein or gelatin membrane, the potential difference was the same as it would have been had the solutions been in direct contact. If the membrane was more negative than the isoelectric point, the weaker solution was more positive than when in free contact; if more positive, the weaker solution was more negative. With agar membranes, the weaker solution was always somewhat more positive than when in free contact except with HCl which eliminated the membrane effect.—*H. D. Hooker*.

9146. GERTZ, OTTO. Laboratorietekniska och mikrokemiska notiser 9. Några iakttagelser över zonbildning i gelatin. [Observations on zone-formation in gelatine.] German summary. Bot. Notiser 1922: 245-256. 1922.

9147. GIRIBALDO, DOMINGO. Notation rationelle pour exprimer la réaction actuelle des solutions. [A rational notation for expressing the true reaction of solutions.] Bull. Soc. Chim. Biol. 7: 652-664. 1925.—The notation proposed would employ the logarithm of the ratio of H to OH ions, $1\text{H}/\text{OH}$. The value of $1\text{H}/\text{OH}$ in pure water is 0. From this point it has increasing positive values with increasing acidity up to $\text{H} = 10^4$, $\text{OH} = 10^{-15}$, where its value is +16, and increasing negative values to $\text{H} = 10^{-15}$, $\text{OH} = 10^4$, where its value is -16. This notation has the advantage that it shows immediately by its sign whether the solution concerned is acid or alkaline, while the Sorensen notation must be memorized.—*Joseph S. Caldwell*.

9148. HANDOVSKY, HANS. Grundbegriffe der Kolloidchemie und ihre Anwendung in Biologie und Medizin: Einführende Vorlesungen für Biologen und Mediziner. [Fundamental concepts of colloidal chemistry and their use in biology and medicine: Elementary lectures for students of biology and medicine.] $vi + 65$ p. J. Springer: Berlin, 1923.

9149. HARRIS, J. ARTHUR. A table to facilitate correction for undercooling in cryoscopic work. Amer. Jour. Botany 12: 499-501. 1925.—It is necessary, in any careful cryoscopic work, to correct the observed temperature at equilibrium for the concentration of the solution due to the separation of the solid phase of the solvent, if the true lowering of the freezing point is to be obtained. A formula and table for determining the amount of this undercooling is given.—*E. W. Sinnott*.

9150. HARRIS, J. ARTHUR, W. F. HOFFMAN, W. B. SINCLAIR, A. H. JOHNSON, AND R. D. EVANS. The leaf-tissue fluids of Egyptian cottons. Jour. Agric. Res. 31: 1027-1033. 1925.

9151. HARVEY, R. B. Red as a protective color in vegetation. Jour. Forest. 23: 179-180, 1925.

9152. HEGGE, R. S. The dissociation constants of some indicators for the determination of the pH by the Duboscq colorimeter. Proc. Soc. Exp. Biol. and Medicine 23³: 235. 1925.

9153. HITCHCOCK, DAVID I. Protein films on collodion membranes. Jour. Gen. Physiol. 8³: 61-74. 10 fig. 1925.—Collodion membranes of high permeability were found to adsorb weighable amounts of gelatin and egg albumin from solutions at 37°C. The relation between amount adsorbed and protein concentration could be expressed by an equation proposed by Langmuir, but not by the usual Freundlich equation. The amount adsorbed was affected by pH, maximum adsorption occurring at the isoelectric point of the protein. The effects of pH on the amount of gelatin adsorbed and on the fluidity of the gelatin solutions were nearly parallel. With membranes of varying permeability the amount adsorbed increased with the permeability and appeared to be a linear function of the relative pore surface. The presence of gelatin on the membranes decreased the rate of flow of water through the membranes so that the calculated relative cross section of the pore openings was a linear function of the amount of adherent gelatin. It was concluded that the gelatin formed a film inside the pores.—*Author*.

9154. HURD-KARRER, ANNIE MAY. Acidity and varietal resistance of wheat to *Tilletia tritici*. Amer. Jour. Botany 12: 359-371. 1925.—The acidity of the sap of wheat seedlings of certain varieties resistant to *Tilletia tritici* and of others susceptible to it was measured by determination of H-ion concentration and by titration. No relation between the former and resistance was found. In most of the resistant varieties the titratable-acid concentration was relatively low and in most of the susceptible ones relatively high, but 2 important exceptions were found to this general relation.—*E. W. Sinnott*.

9155. JACOBSON, H. G. M. Changes in hydrogen-ion concentration in nutrient solutions. Jour. Amer. Soc. Agron. 17: 577-583, 583-586. 1925.—I. In a culture with wheat, increases of pH values in the nutrient solution were probably due to the anion of KNO₃ being taken up more rapidly than the cation. Root excretions were probably also a partial cause for the increase in pH values. Changes in pH values and N concentrations were not due to biological activities. II. In cultures with rice the pH values of the solution changed from an average acidity of 5.0 before growing rice cultures to 3.0 after growing the plants for 3 days. The decrease in pH values, although gradual, was more marked after photosynthesis ceased. The CO₂ given off by the rice plant roots was probably the main cause for reaction changes.—*F. M. Schertz*.

9156. KNUDSON, LEWIS. Hydrogen ion concentration and plant growth. Jour. Amer. Soc. Agron. 17: 711-716. 1925.—More intensive studies are needed on the relation of the H-ion concentration to absorption, metabolism, and growth.—*F. M. Schertz*.

9157. KOJIMA, S. Beitrag zur Kenntnis über die Beziehung der Wasserstoffionenkonzentration mit den Bakterien in zuckerhaltigen Nährböden. [Relation of hydrogen-ion concentration to the bacteria in nutrient media containing sugar.] Sci. Rept. from Gov. Instit. Infect. Diseases, Tokyo Imp. Univ. 2: 305-328. 1923.

9158. LAPIQUE, LOUIS. Sur l'absorption des sels par les cellules végétales, épictèse et sélection. [The absorption of salts by plant cells; epictesis and selection.] Bull. Soc. Chim. Biol. 7: 621-637. 1925.—Diffusion is insufficient to account for the fact that protoplasm takes up certain salts only and takes these regardless of the relative concentrations within and without the cell. This requires expenditure of energy; the vital force which overcomes the physical equilibrium and enables the cell to accumulate salts in concentration greater than that outside, is termed epictesis. The rotation of the protoplasm brings every part of it alternately in contact with the external medium and with the vacuole. At the surface, the albuminoid protoplasmic molecule is in contact with a medium approximately neutral, or alkaline, and combines with sodium, potassium, etc., to form salts. As rotation proceeds, it comes into contact with the acid contents of the vacuole, where it gives up its Na, K, etc. This is in accord with the amphoteric character of the proteins. The energy release in respiration furnishes the motive power keeping up the protoplasmic rotation.—*Joseph S. Caldwell*.

9159. MACDOUGAL, D. T., AND B. L. CLARKE. Hydrophilic effect of ions on agar and protoplasmic components. Carnegie Inst. Washington [D. C.] Year Book 24: 139-140. 1925. (See also Bot. Abst. 15, Entry 1017.)

9160. MICHAELIS, L., UND S. DOKAN. Untersuchungen über elektrische Erscheinungen und Ionendurchlässigkeit von Membranen. VI. Membranen aus Paraffin, Wachs, Mastix, Kautschuk. [Electric properties and permeability of paraffin, wax, mastic and rubber membranes.] Biochem. Zeitschr. 162: 258-265. 1925.—The less concentrated of 2 electrolyte solutions separated by paraffin, wax, mastic or rubber membranes was more positively charged than when in direct contact. The increase in positive charge was greater for monovalent ions than for polyvalent ions, particularly cations. The membrane had no effect when the cation was hydrogen or a tri- or tetravalent ion. The weaker solution was more negatively charged in one case,—thorium solutions separated by a mastic membrane.—H. D. Hooker.

9161. MICHAELIS, L., UND A. FUJITA. Untersuchungen über elektrische Erscheinungen und Ionendurchlässigkeit von Membranen. IV. Potentialdifferenzen und Permeabilität von Kollodiummembranen. [Electrical properties and ion permeability of membranes. Potential differences and permeability of collodion membranes.] Biochem. Zeitschr. 161: 43-60. 1925.—Collodion membranes were almost completely impermeable to all anions. Permeability to cations was proportional to mobility in aqueous solution. Permeability was measured by the potential difference of the 2 electrolyte solutions separated by the membrane and also by prolonged diffusion experiments.—H. D. Hooker.

9162. MICHAELIS, L., UND A. FUJITA. Untersuchungen über elektrische Erscheinungen und Ionendurchlässigkeit von Membranen. VII. Die Permeabilität der Kollodiummembranen für mehrwertige Kationen. [Permeability of collodion membranes to polyvalent cations.] Biochem. Zeitschr. 164: 23-30. 1925.—Collodion is permeable to H, Rb, K, Na and Li ions in decreasing order, and impermeable to all other anions and cations.—H. D. Hooker.

9163. MORÁVEK, VL. O permeabilitě iontu draselného a vápenatého. [Permeability in respect to the ions of potassium and calcium.] Sborník Přírodovědecký [Praha] 1: 66-71. 1925.—The marine alga, *Caulerpa prolifera*, was placed in sea water to which were added different amounts of CaCl_2 . The equilibrium between the external solution and the cell sap is attained during the first 16 minutes. As more Ca is added less K penetrates into the cell; when the increase in concentration of Ca is higher than 32%, the exosmosis of K begins. The higher the concentration of Ca in the solution, the more Ca penetrates into the cell. For comparison the experiments were repeated with swelled discs (plates) of gelatin. The quantity of ions absorbed by the gelatin increases with increasing concentration in the solution. Increasing the amount of one ion in the solution does not affect the absorption of the other ion.—Author.

9164. MORÁVEK, VLADIMÍR. O růstových útvarech vznikajících reakcemi na rozhraní mezi roztoky elektrolytů ve vodě a v gelu. [Growth of structures formed by reactions on the boundary between solutions of electrolytes in water and those in gel.] Spisy Vydavane Přírodovědeckou Fakultou Masarykovy University 59: 1-42. 5 pl. 1925.

9165. MÜLLEROVÁ, L. O t. zv. chemických agglutinacích. [Chemical agglutinations.] Sborník Přírodovědecký [Praha] 1: 72-78. 1925.—This is a critical review of the literature.—Silvestr Prát.

9166. NEEDHAM, J., AND D. M. NEEDHAM. The hydrogen ion concentration and the oxidation-reduction potential of the cell-interior: a micro-injection study. Proc. Roy. Soc. London B 98: 259-286. 7 fig. 1925.—The paper contains a detailed description of the microtechnique employed in measuring the above properties in the case of *Amoeba proteus*. A H-ion concentration of about pH 7.6 and an oxidation-reduction potential of pH 17-19 were determined.—P. B. Sears.

9167. OSTERHOUT, W. J. V. Continuation of investigations on permeability of cells. Carnegie Inst. Washington [D. C.] Year Book 24: 298. 1925.

9168. OSTWALD, W. Kleines Praktikum der Kolloid Chemie. [Practical colloid chemistry.] xii + 172 p. T Steinkopff: Dresden and Leipzig, 1922.

9169. PORT, J. Über die Wirkung der Neutralsalze auf das Durchdringen der H- und OH-Ionen durch das Pflanzenplasma. I. [The action of neutral salts on the penetration of

hydrogen and hydroxyl ions through plant plasm.] *Biochem. Zeitschr.* 166: 105-115. 7 fig. 1925.—Neutral salts that penetrated the cells of *Viola tricolor* petals quickly and were toxic, namely NH_4CNS , NH_4NO_3 , NH_4Cl , NaCNS , KCNS , increased the penetration of H-ions. Barium salts, $(\text{NH}_4)_2\text{SO}_4$ and $\text{Ca}(\text{NO}_3)_2$, had an initial retarding effect but increased H-ion penetration after the plant plasm had been poisoned. Acetates increased penetration of H-ions and were toxic at pH 3.2. Cells died more quickly in acid plus salt solution than in pure acid or salt solution. Alkali salts retarded H-ion penetration in the following order for anions $\text{NO}_3 < \text{Cl} < \text{Br}$, $\text{I} < \text{SO}_4$; for cations $\text{K}, \text{Na} < \text{Li} < \text{Rb} < \text{Cs}$. Salts of the alkali earths that penetrated the cell with difficulty inhibited H-ion penetration.—*H. D. Hooker.*

9170. PRÁT, SILVESTR. Die physikalisch-chemischen Eigenschaften der Pflanzennähr-lösung. I. [Physico-chemical properties of nutrient solutions.] *S. A. Kolloid-Zeitschr.* 35: 97-105. 1924.—The author demonstrates that all nutritive solutions (except van der Crone's) used for higher plants exercise a precipitating action on colloidal solutions. The author used Congo red and plant juices as his colloidal solutions.—*From Preslia (transl.).*

9171. PRÁT, SILVESTR. Resorpce minerálních solí kořeny. (II. Resorpce u čisté linie *Mimulus*. III. Význam kořenů při přijímání solí.) [The absorption of nutrient salts by roots. (II. Experiments with *Mimulus tigrinus variegatus*. III. The Experiments with twigs of plants.)]—*Pub. Facult. Sci. Univ. Charles* 18. 1-24. 1924.

9172. RENNER, O. Zum Nachweis negativer Drucke im Gefäßwasser bewurzelter Holzgewächse. [Determination of negative pressures of the water in the vessels of rooted woody plants.] *Flora* 118-119: 402-408. 2 fig. 1925.—A description is given of an apparatus for measuring the suction forces present when a rapidly transpiring twig or stem is cut. A comparison is made between the suction of an air pump and the suction of the cut stem. Data obtained with this apparatus are listed.—*O. L. Clark*

9173. ROFFO, A. H., ET H. DEGLIORGI. Les conductibilités électriques des tissus normaux et néoplastiques. [The electrical conductivity of normal and of neoplastic tissue.] *Les Neoplasmes* 4: 202. 1925.—The conductivity of transplantable rat carcinomas was much higher than that of normal tissues.—*W. H. W. (Contrib. by Absts. Bact.).*

9174. SHEPPARD, S. E., AND E. K. CARVER. Plasticity in relation to cellulose and cellulose derivatives. *Jour. Phys. Chem.* 29: 1244. 1925.—Most of the earlier workers on the viscosity of solutions of cellulose and cellulose derivatives have neglected the effect of velocity of shear on apparent viscosity. This effect is fairly large with these substances showing that they are true plastics. Plasticity curves for solutions of nitrocellulose in cuprammonium hydroxide and for nitrocellulose in various solvents show that the apparent viscosity may vary many fold according to the rate of shear used. The measurements by Peirce of the moduli of rigidity of single cotton hairs (0.23×10^9 dynes / cm^2), compared with those of the authors on cellulose nitrate and acetate films (0.07×10^9 dynes / cm^2), seem to indicate that the rigidity is decreased by esterification but in view of uncontrolled humidity conditions the measurements are not exactly comparable. Stress-strain diagrams for cellulose ester films show an initial elastic portion, a region of plastic flow, and sometimes a secondary elastic portion. A film that has been repeatedly stretched does not show the same region of plastic flow as an unstretched film. Under steady loads, nitrocellulose films flow with a velocity increasing as a high power of the load. The behavior is like that of the ductile metals rather than that of rubber, although rubber, an organogel, might be supposed to resemble cellulose ester gels more than the metals do. The mechanical behavior, then, must depend on the ultimate particle rather than on the structure. The dynamical model of Shorter and the theories of Mar-dles to explain the elastic behavior of fibers and gels are steps in the right direction.—*From Monthly Abst. Bull., Eastman Kodak Co.*

9175. SMITS, DIRK DEVISSER. Invloed der temperatuur op de permeabiliteit van het protoplasma bij *Beta vulgaris* L. [Influence of temperature on the permeability of the protoplasma of *Beta vulgaris* L.] iii + 100 p. G. C. T. Van Dorp & Co.: 'S-Gravenhage, Utrecht, Netherlands, 1925.

9176. SVEDBERG, THE. Colloid chemistry: Wisconsin lectures. American Chem. Soc. Monograph Ser. 265 p. The Chemical Catalog Co., Inc: New York, 1924.

9177. URSPRUNG, ALFRED. Unsere gegenwärtigen Kenntnisse über die osmotischen

Zustandsgrößen der Pflanzenzelle. [Present knowledge of the osmotic pressure resistance of the plant cell.] Verh. Naturf. Ges. Basel. 35: 111-128. 1 fig. 1923.

9178. WEBER, F. Über die Beurteilung der Plasmaviskosität nach der Plasmolyseformel. [Determination of plasma viscosity by form of plasmolysis.] Zeit. Wiss. Mikros. 42: 146-150. 1925.

9179. WILLOWS, R. S., AND E. HATSCHKE. Surface tension and surface energy. 3d ed. P. Blakiston's Son & Co.: Philadelphia, 1923.

9180. WOOD, J. G. The selective absorption of chlorine ions; and the absorption of water by the leaves in the genus *Atriplex*. Australian Jour. Exp. Biol. and Med. Sci. 2: 45-56. 1 fig. 1925.—In previous work in conjunction with Osborn the opinion had been expressed that the tomentose microphylls inhabiting the arid portions of Central Australia (*Atriplex*, *Kochia*, and *Bassia* spp. particularly) could possibly utilise light showers of rain unavailable to the roots. The present paper submits this opinion to experimental investigation. The amount of water absorbed by the leaves of different species were determined by weighing them before and after placing in an almost saturated atmosphere. In all members of the genus *Atriplex* (especially *A. vesicarium*) and to a less extent in species of *Kochia*, *Bassia*, and *Rhagodia*, a appreciable water-absorption through the leaves was found to occur. The much greater absorption in the case of species of *Atriplex* was correlated with the high salt content of the leaves of these plants. Percentages of NaCl of 12-30 were found for various species of *Atriplex*, the value being less than 7 for other tomentose microphylls and less than 2 in plants with cuticulated leaves. The chloride was shown to be situated mainly in the veins and in the so-called "cubical chlorenchyma" surrounding the veins. The mechanism of absorption is discussed in the light of "suction pressure," and the opinion expressed that the more rapid absorption of water in the case of *Atriplex* spp. results from the high osmotic pressures in the tissues of these plants.—*Geoffrey Samuel*.

WATER RELATIONS

9181. BURGER, HANS. Die Transpiration unserer Waldbäume. [The transpiration of forest trees.] Zeitschr. Forst.- u. Jagdw. 57: 473-482. 1925.—The author proves by using Höhnel's transpiration figures for spruce and beech, the most reliable on hand, that instead of deciduous trees transpiring 5-10 times more water than conifers, a hectare of 100-year-old spruce transpires approximately the same quantity yearly as does a similar stand of beech. A hectare of oak forest of similar description transpires considerably more (1,200,000 kgm. than pine (470,000 kgm.), but at the same time its transpiration quantity is much less than that of spruce and beech, which approximates 2,000,000 kgm. a year. These figures indicate that the popular conception of greater water use by hardwoods over conifers is more or less erroneous. The data point the way for revised silvicultural treatment of stands such as pine and spruce in order to correct present evil conditions.—*J. Roeser Jr.*

9182. CAPPELLETTI, C. Emissione di acqua e formazione di ghiaccio da alcune piante dopo seguito ad una gelata. [Emission of water and formation of ice by certain plants after a frost.] Nuovo Gior. Bot. Italiano N. s. 32: 442-449. 1 pl. 1925.—Following a sudden lowering of temperature to -4° on the nights of November 13 and 14, 1924, plants of *Salvia splendens*, *Heliotropium peruvianum* and *Zinnia elegans* at Pavoda, Italy, were covered by abundant films of ice which extended 6-8 cm. perpendicularly to the axis of the plant and were more abundant at the nodes. The solution obtained from melting this ice was found free of sugars, but contained calcium and pectic substances. The phenomenon is considered to have taken place in 3 successive stages, namely, rupturing of the cambial zone, then extrusion of ice by the active secretion of the living cells and finally death of the plasma and freezing of the internal tissues. The emission of ice is attributed to a physicochemical process affecting the permeability of the cellular ectoplasm due to the lowering of temperature. There is an increased permeability of the plasma and active secretion of water which collects in the intercellular spaces and congeals. Resistance to frost depending on differences in permeability is directly related to the state of vitality of the cells in the sense that exhausted cells show autodigestion due to lack of sugars which are the compounds more active in preventing autodigestion.—*P. D. Caldis*.

9183. GOLDSMITH, G. W., AND J. H. C. SMITH. Physical properties of the sap of *Engelmannia spruce*. Carnegie Inst. Washington [D. C.] Year Book 24: 323. 1925.

9184. GUYE, C. E. Problèmes d'énergetique en relation avec le problème de l'ascension de la sève. Ascension entretenu. 2e note. [Energy relations in the problem of the ascent of sap. 2nd note.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 42: 63-68. 1925.

9185. HENRICI, MARGUERITE. Die Transpiration einiger Gräser in Bechuanaland. [Transpiration of grasses in Bechuanaland.] Verh. Naturf. Ges. Basel. 35: 356-373. 2 fig. 1923.

9186. HUBER, BRUNO. Der Wasserhaushalt des Baumes. [The water economy of trees.] Centralbl. Gesam. Forstw. 51: 111-120. 2 fig. 1925.

9187. LOUIS-MARIE, C. Le problème de la circulation de la sève. [The circulation of sap.] Sci. Agric. 6: 98-100. 1925.—The mechanism of the circulation is based on 2 different facts: (1) the mechanical non-transmission of pressures, which limits the double action of leaf respiration and root pressure, and (2) the indefinite transmission of osmotic pressures through the medium of the living cells.—*Translation of author's summary.*

9188. MACDOUGAL, D. T. Absorption and exudation pressures of sap in plants. Carnegie Inst. Washington [D. C.] Year Book 24: 145-147. 1925.—(See also Bot. Absts. 15, Entry 4063.)

9189. MACDOUGAL, D. T. Effect of disturbances in the hydrostatic system of a tree by girdling, topping, and defoliation. Carnegie Inst. Washington [D. C.] Year Book 24: 148-149. 1925.

9190. MACDOUGAL, D. T. Methods of measuring movement and pressure, and of extraction of sap in trees. Carnegie Inst. Washington [D. C.] Year Book 24: 147-148. 1925.

9191. MACDOUGAL, D. T. Reversible variations in volume of stems and movement of sap. Carnegie Inst. Washington [D. C.] Year Book 24: 138-139. 1925.

9192. MONTEMARTINI, L. Di uno speciale adattamento delle cloroficee all' asciutta delle acque. [A special adaptation of the chlorophyceae to drying.] Atti Ist. Bot. Univ. Pavia. Ser. III. 2: 1-6. 1925.—Species of *Cladophora*, *Oedogonium* and *Spirogyra*, and *Hydrodictyon reticulatum* were found, in nature and laboratory, to retain more water and to lose it more slowly when growing in a small amount of stagnant water than when growing in an abundance of constantly renewed water. Young colonies of *H. reticulatum* retain the water more than adult colonies and the formation of many young colonies in small pools of stagnant water serves to tide this species over periods of dryness. The author concludes that in cases of slow drying of the water, Chlorophyceae are able to resist dryness through the property of retaining more water. This may be due to an increase of osmotic pressure in the cells and thereby an increase in water-holding capacity. This, however, does not always hold true. Another cause of the phenomenon may be an alteration in the chemical composition of the cell walls (increase in pectin), increasing thus their hygrophily.—*P. D. Caldis.*

9193. ÚLEHLA, V. Water factors in plant cells (especially in desert succulents.) Carnegie Inst. Washington [D. C.] Year Book 24: 153-154. 1925.

9194. ÚLEHLA, V. Water intake in plant cells with special regard to desert succulents. Carnegie Inst. Washington [D. C.] Year Book 24: 149-152. 1 fig. 1925.

MINERAL NUTRIENTS, SALT RELATIONS

9195. BRENCHLEY, W. E., AND H. G. THORNTON. The relation between the development, structure, and functioning of the nodules on *Vicia Faba*, as influenced by the presence or absence of boron in the nutrient medium. Proc. Roy. Soc. London B, 98: 373-399. 4 pl. 1925.—Nodules on cultures grown in absence of boron show a defective vascular supply if any, and the number of macroscopic nodules is much reduced. The number of swollen "bacteroids and amount of nitrogen fixation is closely related to the degree of vascular development in nodules, none of the bacteria swelling to form bacteroids if vascular strands are absent. Vascular deficiency of the nodules leads to active parasitism directed against the densely protoplasmic part of the nodule. Since the latter constitutes the apical meristem of normal nodules the growth of the nodule is affected by this parasitism. It is suggested that vascular deficiency affects the carbohydrate supply otherwise available for the bacteria.—*P. B. Sears.*

9196. CRANNER, BARTHOLOM HANSTEEN. Om vegetationsforsk med glimmermineraleerne biotit og sericit som kaliklide. [Vegetation experiments with biotite and sericite as source of

potash.] 37 p. (Norges geologiske undersøkelse. Nr. 114.) H. Aschenhou & Co.: Kristia 1922.

9197. GELLHORN, ERNST. (Samelreferat.) *Physiologische Untersuchungen an Spermatozoen und Eiern.* [Physiological investigations on spermatozoa and eggs.] Arch. Mikr. Anat. 101: 437-443. 1 fig. 1924.—This paper discusses the toxic effect that various solutions of alkali chlorides produce on the sperms and eggs of certain amphibians; also the pH level that will permit a development of the eggs. The latter were determined by Sorensen's buffers and salts when the concentration was not over $n/40$. Eggs develop between pH 3 and pH 13. An explanation of the action of salts on the generative cells is to be sought in an action upon the condition of the cell colloid.—H. C. Sands.

9198. GERICKE, W. F. Salt requirements of wheat at different growth phases. Bot. Gaz. 80: 410-425. 10 fig. 1925.—Wheat plants were started in a complete nutrient solution and then transferred to solutions deficient in one or another of 7 essential elements. For comparison other plants were started in deficient solutions and transferred to complete solutions. Beneficial effects were noted when plants were grown for 4 weeks in a complete solution and then transferred to deficient solutions. Plants similarly grown without K were equal to those in complete solution. When K was withheld after 6 weeks the effect was beneficial. Ca and Mg were required for the longest period of growth for best results. Renewal of the complete solution was not favorable in comparison with non-renewal. Duration of exposure to complete solutions in excess of the optimum before transfer to deficient nutrient resulted unfavorably when the final solutions were deficient in K, Mg, P, or S.—L. G. Willis.

9199. GUNST, JOHANNES ANDREAS. Over antagonisme van den *Bacillus pyocyaneus* [Antagonism in *B. pyocyaneus*.] iii + 103 p. A. H. Kruyt: Amsterdam, 1922.

9200. HARRIS, J. ARTHUR, CLARA T. HOFFMAN, and WALTER F. HOFFMAN. Sulphur content of the leaf-tissue fluids of Egyptian and Upland cotton. Jour. Agric. Res. 31: 653-660. 1925.

9201. HOPKINS, E. F., and F. B. WANN. The effect of the H-ion concentration on the availability of iron for *Chlorella* sp. Jour. General Physiology 9: 205-210. 1925.

9202. LESAGE, P. Action comparée de la sylvinite et de ses composants sur les premiers développements des plants. [Comparative effect of sylvinite and of its components on the initial growth of plants.] Prog. Agric. et Vitic. 78: 547-549. 1922.—Wheat, oats, and *Lolium sativum* were grown in solution cultures of sylvinite, and of the salts composing it, using Knop's solution and distilled water for checks. Sylvinite gave greater growth than did a combination of its components tried, greater also than distilled water, and nearly as great as Knop's solution.—E. L. Proebsting.

9203. LOEHWING, WALTER FERDINAND. Effects of lime and potash fertilizers on certain muck soils. Bot. Gaz. 80: 390-409. 7 fig. 1925.—Crops on acid muck soils chemically deficient in Ca or K may be injured by these elements in fertilizers. Clover is frequently injured by K. Potassium increased stem erectness. Use of CaCO_3 as a fertilizer depressed the K content and the K/Ca ratio in crops grown on acid mucks. High yields of clover showed a high K/Ca ratio in tissues. Crop yield of cereals was not dependent on the value of the K/Ca ratio. Injuries following Ca and K applications to the soil are marked internally by depression of organic N and carbohydrate content. Antagonism of ions between Ca and K was not observed, that is, neither eliminated the injurious effects of the other. High nitrate was associated with high Ca content of tissues and low crop yield. High crop yield is associated with high organic N and high total carbohydrate content.—W. F. L.

9204. MARSH, R. P., and J. W. SHIVE. Adjustment of iron supply to requirements of the bean in solution culture. Bot. Gaz. 80: 1-27. 2 fig. 1925.—Under the conditions imposed by various nutrient solutions Fe from different sources may promote (1) normal growth, (2) chlorosis due to lack of iron in the leaves of the plant, and (3) toxicity characterized by mottling of the leaves. With Tottingham's $\text{T}_1\text{R}_1\text{C}_5$ solution as modified by Jones and Shive, Shive's 3 salt R_2S and Tottingham's $\text{T}_1\text{R}_1\text{C}_5$ solution having Fe supplied to each as ferric glycerophosphate, soluble ferric phosphate, ferric tartrate, and ferrous sulphate, and with reactions adjusted at pH 4.6, 5.5, and 6.2, the Fe remaining in solution, reaction had little effect in the modified Tottingham solution while solubility decreased with the other 2 in the case of solu-

ferric phosphate and ferrous sulphate. Soybeans grown in these 3 solutions with ferric glycerophosphate, soluble ferric phosphate, ferrous sulphate, developed normally with the 2 latter sources of Fe or the 3-salt and Tottingham's, whereas ferric glycerophosphate produced chlorotic plants. With the modified Tottingham solution the latter form of Fe produced normal plants while the other 2 were toxic. This toxicity was probably associated with increased acidity of solution. Normal plants were characterized as having a low content of Fe in tops, in contrast to a high Fe content in both the chlorotic and "toxic" plants. All the toxic plants were found on modified Tottingham solution while all chlorotic plants were grown in solutions with ferric glycerophosphate as the source of Fe. In normal plants the distribution of Fe between leaves and stems was uniform, in chlorotic plants the Fe was lower in the leaves but higher in the stems as compared with normal plants, in "toxic" plants Fe was lower in the leaves, though in both cases higher than with normal plants. It was possible to adjust the Fe supply from each source for each solution according to the appearance of the plants, to produce normal growth.—*L. G. Willis.*

9205. MAYER, ANDRÉ, ET L. PLANTEFOL. Influence des électrolytes du milieu sur les échanges gazeux des mousses. [Influence of electrolytes in the media on the exchange of gases in mosses.] *Compt. Rend. Acad. Sci. [Paris]* 181: 1094-1095. 1925.—Mosses were immersed in solutions of various salts between N and N/1000, and in various organic and inorganic acids from N/10 to N/20,000, and the oxygen absorption and CO₂ liberation was measured. The various salts employed did not affect respiration to the same extent, and the effective concentrations were not the same. A few salts produce only an increase in respiration, with no diminution at higher concentrations. Others, such as CaCl₂, only diminish this process and cause no acceleration in weak solutions. The active concentrations of acids are lower than those of salts: we may compare, for example, NaCl N/2 with HCl N/300. Furthermore, these electrolytes affect the respiration quotient, and this persists for several days.—*C. H. Farr.*

9206. MILLAR, C. E. Hill fertilization of corn. *Michigan Agric. Exp. Sta. Quart. Bull.* 5: 69-73. 8 fig. 1922.—Report of comparative growth of plants and roots of corn where the fertilizers were applied broadcast and where they were applied in the row near the seed. Early in the season the latter gave the most rapid growth, but the root systems were much alike and not concentrated in the row in the plants where the fertilizers were confined to the row. The latter reached the tasseling stage first. The root-growth at this season was alike in both cases.—*Ernst A. Bessey.*

9207. MIYAKE, KOJI, AND MASASHI ADACHI. Influence of manurial ingredients upon the hydrogen-ion concentration of the juice of rice plant. *Jour. Biochem. Tokyo* 5: 321-326. 1925.—Previous work by the authors has shown that in oats and flax fertilization with nitrogen tends to lower the H-ion concentration of the sap while potash or phosphoric acid raises it. (*Ibid* 4: 317-321. 1924.) Pot experiments with rice, varieties Bozu and Akage, show that nitrogen, alone or in conjunction with other fertilizer ingredients, decidedly lowers the H-ion concentration; phosphoric acid raises it. Potash decreases the H-ion concentration of the juice in the period up to the appearance of the ear; in later stages of growth the concentration is increased. Application of lime also results in lowering the H-ion concentration.—*Joseph S. Caldwell.*

9208. MONTEMARTINI, L. Alcune esperienze di incisione anulare sopra *Syringa Vulgaris*. [Ringing experiments on *Syringa vulgaris*.] *Rend. R. Ist. Lombardo Sci. e. Lett.* 58: (1-8). 1925.—Ringing experiments, for 3 consecutive years, on 1-year-old twigs of *Syringa vulgaris*, whose leaves had assumed full development and the terminal buds were resting, show that the incision has not interfered with the transfer to the leaves of the mineral substances found in the ash. The leaves on ringed branches contained a greater absolute quantity of minerals per unit surface than on the control branches. This is explained on the basis of the former work of the author (see *Bot. Absts.* 13, Entry 7952), suggesting that the interruption of the cortical tissues has interfered with the descent of that small quantity of minerals which is combined with the products of photosynthesis. The author concludes that ringing exercises no effect on the circulation of the mineral substances that are absorbed by the roots from the soil and ascend with the transpiration current; on the contrary, the circulation of the mineral

substances that are incorporated with the products of photosynthesis is interfered with.—*P. D. Caldis.*

9209. MONTEMARTINI, L. Sopra la circolazione delle sostanze minerali nelle foglie di *Ficus carica* L. e di altre piante munite di sistema laticifero. [Circulation of mineral substances in leaves of *F. carica* and other laticiferous plants.] Atti Ist. Bot. Univ. Pavia. Ser. III. 2: 335–340. 1925.—The author continues his work (see Bot. Absts. 13, Entry 7952) on the nightly translocation of Ca, P, and K from the leaves to the stem in connection with the translocation of the products of photosynthesis. He uses laticiferous plants in order to determine the effect, if any, of such a system. Analyses were made for Si, Ca, and P, in the evening and in the morning, on analogous parts of leaves of *Ficus carica*, *Euphorbia marginata*, and *Asclepias syriaca*. The results agree with the former experiments. There is a decrease in the percentage of Ca, P, and K, and an increase of Si, in the ash of leaves collected in the morning as compared with the ash of leaves collected the previous night. The presence of the laticiferous system does not interfere with the translocation of minerals.—*P. D. Caldis.*

9210. NEWTON, J. D. The relation of the salt concentration of the culture solution to transpiration and root respiration. Sci. Agric. 5: 318–320. 1925.—An increase in the salt concentration of the culture solution results in an increase in the rate of root respiration, as related to transpiration, and consequently more energy must be expended in the absorption of a given volume of solution. The rate of transpiration decreases with the increase in salt concentration. The concentration of the soil solution is one of the factors governing the water requirements of crops.—*T. G. Major.*

9211. NORRIS, R. V., AND C. V. RAMASWAMY AYYAR. The nitrogen and mineral requirements of the plantain. Agric. Jour. India 20: 463–467. 1925.—An analysis of a full grown plantain tree showing the distribution of various constituents such as nitrogen, potash, phosphoric acid and lime in the plant.—*D. V. Bal.*

9212. RAVAS, L., G. VERGE, H. LAGATU, ET L. MAUME. Influence de la potasse sur la santé de la vigne et sur la qualité des vins. [The influence of potassium on the health of the vine and the quality of wine.] Prog. Agric. et Vitic. 79: 9–15, 35–41. 1 pl. 1923.—(See also Bot. Absts. 14: Entry 7230.)

9213. TRELEASE, SAM F., AND HELEN M. TRELEASE. Growth of wheat roots in salt solutions containing essential ions. Bot. Gaz. 80: 74–83. 2 fig. 1925.—This paper reports a study of root growth in very young wheat seedlings supplied with solutions containing one or more of the salts KH_2PO_4 , $\text{Ca}(\text{NO}_3)_2$ and MgSO_4 . Thirty-seven different solutions were tested, each with a total concentration of 0.06 G.M. per liter. Besides the 3 single-salt solutions, the series included 9 2-salt solutions and 25 3-salt solutions. Marked retardation of root elongation did not occur unless the volume-molecular concentration of at least 1 of the 3 salts constituted less than about 10% of the total volume-molecular concentration of the solution. The roots were not very sensitive to small differences in salt proportions, except when the partial concentration of CaNO_3 in the solution was below about 5% of the total concentration. The results are presented by means of triangular co-ordinates, and they are very consistent. It appears that root elongation in very young seedlings furnishes a subject that is not too complex for experimentation aiming toward reliable results.—*Authors.*

PHOTOSYNTHESIS, CHEMOSYNTHESIS, CHLOROPHYLL

9214. BELJERINCK, M. W. Chemosynthesis with sulfur as a source of energy. Proc. Koninklijke Akad. v. Wetenschappen, Amsterdam 22: 899–908. 1920. (See also Bot. Absts. 9, Entry 1021.)

9215. KLUGH, A. BROOKER. The effect of light of different wave-lengths on the rate of reproduction of *Volvox aureus* and *Closterium acerosum*. New Phytol 24: 186–190. 2 fig. 1925.—The rate of reproduction of 5 specimens each of *Volvox aureus* and *Closterium acerosum* in red, green, and blue light, if taken as a criterion of photosynthetic activity, shows that photosynthesis is a wave-length phenomenon, red being most efficient, blue much less so, and green inefficient.—*I. F. Lewis.*

9216. LINGELSHEIM, v. A. Über einen chlorophyllartigen, grünen Farbstoff aus den Flores *Primulae*. [A chlorophyll-like green coloring matter from *Primula* flowers.] Arch. Pharm.

u. Ber. Deutsch. Pharm. Ges. 1925: 121-122. 1925.—The author observed that the yellowish flowers of *Primula officinalis* and *P. elatior* turned green upon slow drying. The dried flowers were extracted with water and after several experiments the author considers the coloring matter to be of the nature of chlorophyll, due to its behavior toward acids, its green color, its red florescence, its reaction toward light, its absorption band in the spectrum, etc. It differs from chlorophyll in that it is soluble in water and not in alcohol or benzin. The author believes its formation to be due to enzymic action, as the green color does not appear in flowers which are dried rapidly, these retaining their original yellow color.—*Elmer H. Wirth.*

9217. [ЛМВИМЕНКО, В. Н.] Любименко, В. Н. О специфическом действии монохроматического света в фотосинтезе. [The specific action of light rays of diverse color in photosynthesis.] (French resume.) Известия Научного Института П. Ф. Лесгафта [Bull. Inst. Lesshaft] 8: 143-152. 1924.—(See also Bot. Absts. 13, Entry 3831.)

9218. SPOEHR, H. A., AND WILLIAM NEWTON. Absorption of carbon dioxide by leaf material. Carnegie Inst. Washington [D. C.] Year Book 24: 160-161. 1925.

9219. STILES, WALTER. Photosynthesis: The assimilation of carbon by green plants. *ibid.* + 288 p. Longmans, Green and Co.: London, 1925.

9220. WARBURG, O. Versuche über die Assimilation der Kohlensäure. [Experiments on carbon dioxide assimilation.] Biochem. Zeitschr. 166: 386-406. 5 fig. 1925.—The literature on carbon assimilation, particularly that dealing with *Chlorella*, is reviewed and discussed. The specific photochemical action, induced by a unit of radiant energy, decreases from 59% of the total absorbed radiant energy in red light to 34% in blue light. The transfer of radiant energy from the leaf pigments that absorb it to the CO₂ is considered a surface phenomenon. The number of quanta used per molecule of CO₂ is calculated as 4 for red and yellow and 5 for blue light. The Blackman reaction is considered subsequent to the photochemical and resembles the enzymatic cleavage of O from a peroxide in being a linear function of temperature, in its sensitivity to HCN and H₂S and to narcotics.—*H. D. Hooker.*

9221. WŁODEK, J. The spectrum of chlorophyll in the living leaf. Bull. Acad. Sci. Cracovie 5-6 B: 407-423. 1 pl. 1924 [1925].—By superposing the spectrograms of chlorophyll *a* and *b* and copying them on the same plate, a photogram was obtained very well corresponding to the spectrum of the living leaf. It may be assumed, therefore, that the 2 chlorophylls are not mixed in the chloroplast, but dissolved each in a separate solvent; the resulting spectrum being due to the optical intermixing of the 2 spectra. This might explain the chief difference between the spectrum of the living leaf and that of a chlorophyll solution. Other differences were investigated and an attempt was made to explain the altering of the spectrum of a leaf exposed to the influence of light.—*K. Strzemiński.*

METABOLISM (GENERAL)

9222. BERG, RAGNAR. Vitamins: a critical survey of the theory of accessory food factors. Translated from the German by E. AND C. PAUL. 415 p. G. Allen & Unwin, Ltd.: London, 1923.

9223. BODNAR, J. Biochemie des Phosphorsäurestoffwechsels der höheren Pflanzen. I. Über die enzymatische Überführung der anorganischen Phosphorsäure in organische Form. [Phosphoric acid metabolism of higher plants. Enzymatic conversion of inorganic to organic phosphoric acid.] Biochem. Zeitschr. 165: 1-15. 1925.—Disodium phosphate was converted to organic phosphate by pea meal. In 24 hours 5 gm. of pea meal esterified 50.2 mg. phosphoric acid. No esterification occurred when the meal was heated or extracted with methyl alcohol.—*H. D. Hooker.*

9224. BORNTRÄGER, ARTHUR. Über die organischen Säuren der Tomaten, besonders die Citronensäure und deren Verbindungszustand. [Organic acids of tomatoes with special reference to citric acid and its combinations.] Zeitschr. Untersuch. Nahrungs- u. Genussmittel 50: 273-300. 1925.—Tomatoes, chiefly Italian varieties, in various stages of ripeness were found to contain citric and malic acids, but no oxalic, tartaric, racemic, succinic, lactic, or other volatile or organic acids. Partially decomposed fruit contained succinic acid. Citric acid content decreases with ripening; in 3 cases the malic acid content also fell; in 3 others it remained constant. Citric and malic acids disappeared from ripe-picked fruit when the latter

became soft. The acidity of various varieties was compared. The acids were usually present as primary citrates and bi-malates. Secondary citrates were usually present in smaller amount. Free acid was present in the juice of unripe tomatoes and in 1 variety of ripe tomatoes. The phosphate content of the juice diminished with ripening. The paper includes extensive citation of previous work of similar scope.—*E. E. Stanford.*

9225. BRIDEL, M. [Rev. of: BELVAL, H. *La genese de l'amidon dans les cereales* (Formation of starch in the cereals.) Imp. Lest. Nemours 1924.] Bull. Soc. Chim. Biol. 7: 755-756. 1925.—The first product of photosynthesis is saccharose, which is transported as formed and is gradually hydrolyzed in transit. Cereals are divided into 2 groups with respect to the next steps. In the corn group, hexoses from the leaves accumulate in the stalk as saccharose, never passing as hexose to the ear. As the ear develops, saccharose is transported into it, being in part inverted upon its entry; young grains contain always a small quantity of saccharose and a large proportion of reducing sugar, never having soluble glucoside. In the group of the grains, it is never saccharose which is formed from the hexoses coming from the leaves, but a levulosan, previously unknown, which increases in amount until heads are formed, then gradually disappears. The grains from fertilization onward are rich in levosine, which disappears toward maturity, forming starch. At no time in any cereal, either in stalk or grain, is there a trace of dextrin. In corn saccharose, and in wheat and other grains a mixture of saccharose and levulosans has hitherto been mistaken for dextrin.—*Joseph S. Caldwell.*

9226. BRIQUET, J. *Le melanerythrisme floral chez le Daucus carota L.* [Melanerythrism of the flowers in carrots.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 39: 159. 1922.

9227. BRÜHL, PAUL. *Commentationes phytomorphologicae et phytophysiologicae. I. Vitamines.* [Comments on vitamins.] Jour. Dept. Sci. Univ. Calcutta 5: 1-5. 1923.—After reviewing the occurrence of vitamins in various plants, and their significance in animal life, the author suggests certain botanical problems connected with them.—*Winfield Dudgeon.*

9228. BRÜHL, PAUL, ET ATULCHANDRA DUTTA. *Commentationes Phytomorphologicae et Phytophysiologicae. III. Eichornia studies.* Jour. Dept. Sci. Univ. Calcutta 5: 3-8. 2 pl. 1924.—This is a study of the distribution of potassium in the various parts of *Eichornia speciosa*. Various methods of preparing reagents for detection of potassium were tested, and Treadwell's cobalt nitrate reagent is recommended, because it keeps longest. Potassium was found to occur in all parts of the plant, though in somewhat varying proportions. The stem contains the largest amount.—*Winfield Dudgeon.*

9229. BURNET, F. M. *A note on the effect of dyes on bacterial growth.* Australian Jour. Exp. Biol. and Med. Sci. 2: 77-82. 2 fig. 1925.—It was decided to investigate whether the inhibitory effect of dyes on various bacteria was neutralized by diffusible products of growth as was found to be the case with the inhibitory effect of H_2O_2 and cyanide (see following Entry). Incubation of agar plates containing 0.5% of a saturated aqueous solution of acid fuchsin spread in sectors with dilute saline suspensions of various organisms showed no inhibition of *B. coli*, *B. typhosus*, or *B. pyocyaneus*, but complete inhibition of *Staphylococcus aureus*, a diphtheroid bacillus, and Friedlander's bacillus, except in the immediate neighborhood of a central area heavily inoculated with *S. aureus*, exactly as would be their reaction towards peroxide or cyanide. The results are discussed in relation to the possibility of the action of the dye at the limiting dilutions falling mainly on the function of peroxide destruction, and correlated thus with the peroxide and cyanide effect previously mentioned.—*Geoffrey Samuel.*

9230. BURNET, F. M. *Hydrogen peroxide and bacterial growth.* Australian Jour. Exp. Biol. and Med. Sci. 2: 65-76. 3 fig. 1925.—Exposure of nutrient agar plates to light was found to result in the appearance of traces of H_2O_2 sufficient to inhibit the growth of isolated staphylococci (especially *Staphylococcus aureus*) and other organisms. Rays of short wave-length only, unless the medium was sensitized by a suitable dye, were concerned. A degree of inhibition corresponding to that induced by 30 minutes exposure to sunlight could be obtained by adding peroxide to the medium to a concentration of approximately 1: 40,000. The inhibition could be neutralized by diffusible products of growth of staphylococci, some of which were thermostable; these acted as reducing agents, destroying the peroxide. An inhibition of growth due to potassium cyanide could also be neutralized by these substances. Anaerobic growth of staphylococci was found possible in concentrations of cyanide higher than those com-

pletely inhibiting aerobic development. It was concluded that the presence of catalase and of the diffusible substances studied in the bacterial colony was an indication of a primitive means of keeping constant the immediate environment, so as to allow the type of metabolism most suited to the organism to be maintained.—*Geoffrey Samuel*.

9231. CALDWELL, JOSEPH S. Some effects of seasonal conditions upon the chemical composition of American grape juices. *Jour. Agric. Res.* 30: 1133-1176. 13 fig. 1925.

9232. CARAY, E. M. Isolation and identification of some of the agars in copra meal and coconut water. *Philippine Agric.* 13: 229-253. 3 pl. 1924.—Raffinose, sucrose, fructose, galactose, and glucose were isolated and identified.—*S. F. Trelease*.

9233. CHAPMAN, ROBERT E. The rôle of cane-sugar in the plant. *New Phytol* 24: 308-309. 1925.—The author regards as unproved the contention of Parkin (*Ibid.* 24: 57-64.) that cane sugar may be directly synthesized into starch.—*I. F. Lewis*.

9234. CHODAT, R., ET E. ROUGE. Sur l'analogie des anthocyanines et des flavones. [The analogy of anthocyanins and flavones.] *Compt. Rend. Soc. Phys. Hist. Nat. Genève* 40: 16-19. 1923.

9235. DIENES, L., AND E. W. SCHOENHEIT. The specific fraction of alcohol soluble substance of the tubercle bacillus. *Proc. Soc. Exp. Biol. and Med.* 23²: 106-108. 1925.

9236. DORMANN, F. Zur Kenntnis der Hautdrüsen und der Harzsekretion von *Alnus viridis*. [The epidermal glands and the resin excretion of *A. viridis*.] *Sitzungsber. Akad. Wiss. Wien. Math.-Natur. Klasse, Abt. I*, 133: 585-612. 1 pl., 3 fig. 1924.—This work consists of 2 parts: (1) Development of the trichomes; (2) micro-chemical researches on certain materials concerned with resin production. These resin glands are present in buds as well as leaves. They develop first in the buds but are less numerous in the leaves. They are of equal size and as a rule occur on the surface of the vascular bundles. The number on the upper and under side of the leaves is apparently the same. The glands appear on the leaves scarcely before they unfold. According to the author a large number do not function in resin secretion after the leaves unfold. Each gland arises from an epidermal cell and consists of neck and main body. The neck consists of several cells. In the gland cells are numerous conspicuous globules which from microchemical studies are shown to be polyterpenes of high molecular weight. The cell contents are apparently associated with resin production. These globules are not only in the glands but also in the epidermal cells of the entire leaf. Therefore the whole epidermis apparently can be considered to take part in resin formation; the membrane has a resin-forming layer called the resinogenous layer.—*H. Cammerloher (transl.)*.

9237. DUFRENOY, J. Le métabolisme du soufre. [Sulphur metabolism.] *Ann. Soc. Hydrol. Med.* 64: 26. 1922.—Wherever hydrogen sulphide and oxygen are in contact, sulphur bacteria may oxidise H_2S into S. Examples are cited from the thermal springs of Luchon and Barèges as well as from the neighboring ore beds in the Pyrenees, or from H_2S -containing cumaroles springing from the schistous deposits intermingled with coal beds in central France. Zinc sulphide may be oxidised in nature, as well as iron sulphide through bacterial activity, resulting in the deposition of zinc sulphate and sulphur as crystals, for instance in the refuse of the metallurgical plants of the "Vieille montagne;" both processes of sulphification are analogous to that of nitrification.—*J. Dufrenoy*.

9238. ELLIS, C., AND ANNIE L. MACLEOD. Vital factors of foods: vitamins and nutrition. xvi + 391 p. Chapman and Hall, Ltd.: London, 1923.

9239. FARR, CLIFFORD H. Root-hair elongation in Knop's solution and in tap water. *Amer. Jour. Botany* 12: 372-383. 1925.—Roots of *Tradescantia fluminensis* were grown in tap water and in Knop's solution and the rate of growth of root-hairs was studied. No S-shaped grand period of growth, such as has been found for many plant organs, was observed, growth being relatively constant throughout the life history of the root-hair. The nucleus keeps fairly close to the end of the hair and moves outward at about the same rate that the hair grows.—*E. W. Sinnott*.

9240. GERTZ, OTTO. Laboratorietekniska och mikrokemiska notiser. 6. Jodstärkel-sereaktioner och dess diagnostiska entydighet. [Laboratory-technical and micro-chemical notices. Iodine-starch-reaction and its diagnostic value.] *Bot. Notiser* 1921: 165-173. 1921.—With resumé in German.

9241. GRAFE, V., UND H. MAGISTRIS. Zur Chemie und Physiologie der Pflanzenphosphatide. II. Die wasserlöslichen Phosphatide aus *Aspergillus oryzae*. [Water-soluble phosphatides of *A. oryzae*.] *Biochem. Zeitschr.* 162: 366-398. 1 fig. 1925.—From an aqueous extract of pure cultures of *Aspergillus oryzae* at 17°C., lead acetate in neutral solution precipitated a phosphatide, $C_{48}H_{96}NPO_{15} \cdot 2 Pb$, that yielded oleic, palmitic and phosphoric acid, betaine, glycerol and glucose. A similar compound was precipitated by cadmium chloride.—*H. D. Hooker.*

9242. HENRICI, MARGUERITE. Zweigipfelige Assimilationskurven. [Assimilation curves with two maxima.] *Verh. Naturf. Ges. Basel* 32: 107-171. 1920-1921.

9243. HEPWORTH, HARRY. Chemical synthesis; studies in the investigations of natural organic products. *xx + 243 p., illus.* Blackie and Son: London, 1924.

9244. HOSOYA, S., AND M. KUROYA. Water soluble vitamin and bacterial growth (First report). *Sci. Rept. Tokyo Imp. Univ.* 2: 233-264. 1923.

9245. HOSOYA, S., AND M. KUROYA. Water-soluble vitamin and bacterial growth (Second report). *Sci. Rept. Tokyo Imp. Univ.* 2: 265-285. 1923.

9246. IWANOFF, N. N. Über den Ursprung des von Schimmelpilzen ausgeschiedenen Harnstoffs. [The source of urea excreted by molds.] *Biochem. Zeitschr.* 162: 424-440. 1925.—Urea arises from arginine, $\frac{1}{2}$ the nitrogen being converted by *Aspergillus niger* to urea, the other $\frac{1}{2}$ to ammonia. This can be used for the quantitative estimation of arginine in protein.—*H. D. Hooker.*

9247. KAFUKU, KINZO. On the formation of safroeugenol and isosafroeugenol from safrol and isosafrol. *Acta Phytochim.* 2: 113-118. 1925.

9248. KEILIN, D. On cytochrome, a respiratory pigment common to animals, yeast and higher plants. *Proc. Roy. Soc. London B* 98: 312-339. 6 fig. 1925.—Spectrometric evidence is presented of the presence of an unknown oxidising pigment in the organisms named, and in certain bacteria. In the reduced form this pigment shows 4 major absorption bands. On oxidation these bands disappear. Oxidation of the pigment is produced by air; reduction by the cell itself, or by chemicals. The substance in question is distinct from muscle haemoglobin and is identified with myohaematin and histohaematin described by MacMunn about 1886 as a widespread respiratory pigment.—*P. B. Sears.*

9249. KUNIZAKI, T. On the indol production of *B. influenza*. *Sci. Rept. Tokyo Imp. Univ.* 1: 53-55. 1922.

9250. KUROYA, M., AND S. HOSOYA. The synthesis of the water-soluble vitamin by coli bacillus grown on synthetic medium. *Sci. Rept. Tokyo Imp. Univ.* 2: 287-304. 1923.

9251. LAIDLAW, P. P., AND H. W. DUDLEY. A specific precipitating substance from tubercle bacilli. *British Jour. Exp. Path.* 6: 197-201. 1925.—Glycogen was isolated from tubercle bacilli and also a carbohydrate complex of the nature of a gum. The gum gives specific precipitation with immune serum but it is not a true antigen, since it fails to induce the formation of antibodies. The gum has no relation to tuberculin.—*S. A. K. (Contrib. by Absts. Bact.).*

9252. LASSALLE, REMOND, ET H. LASSALLE. Production de cholestérine par un champignon. [The production of cholesterolin by a fungus.] *Compt. Rend. Soc. Biol.* 93: 426. 1925.—*Penicillium glaucum* taken from Roquefort cheese and grown upon bread produced fatty acids, lipoids, and cholesterolin at the expense of the carbohydrates present.—*Oran Raber.*

9253. LEATHES, J. B. Rôle of fats in vital phenomena. *Lancet* 208: 853, 957, 1019. 1925.—Simple fats, triglycerides, have some 50 paraffin carbon atoms, arranged in 3 parallel rows, for 6 of which some hydrophile properties have to be assigned. Lecithine, with perhaps 34 paraffin carbon atoms, in 2 rows, attached to a much larger hydrophile group, presents in this group, in addition to the glyceryl ester arrangement of the simple fat, a free phosphoric acid hydroxyl and a free basic hydroxyl in choline. It has thus 30% less of the paraffin and an incalculably greater hydrophile component. It behaves totally differently from simple fats.—The author discusses the following points: Is there structure in protoplasm? Liquidity of protoplasm. Viscosity of cell substance. Structure of the protein molecule. Cell proteins. Permeability of cells. Interfacial phenomena and cellular physiology. He points out that from what is known of proteins it is impossible to account for cell properties by their aid alone, but that there are many indications that knowledge of the properties of fat in these vital phenomena may be of service.—*E. M. A. E. (Contrib. by Absts. Bact.).*

9254. MACLEOD, ANNIE L., AND C. ELLIS. Vital factors of foods: Vitamins and nutrition. *xvi* + 391 p. Chapman and Hall, Ltd.: London, 1923.

9255. MARSTON, H. R. The sterol of *Boletus granulatus*. Australian Jour. Exp. Biol. and Med. Sci. 1: 53-57. 1924.—The remarkably rapid growth of the fruiting-bodies of certain fungi suggested comparison of the sterols present with cholesterol, known to have a definite accelerative influence on the rate of growth of certain carcinomas. From every 10 kilos of fresh fungus about 50 mgm. of long, flat crystals were obtained by drying, extracting with acetone, extracting the tarry extract with petroleum, and recrystallizing from alcohol. The sterol was identical in crystalline form and melting-point with that isolated by Ikeguchi from several allied species of fungi, and named mycosterol. The reactions of cholesterol, phyto-sterol, mycosterol, and several cholesterol derivatives towards arsenic trichloride (Kahlenberg's test) are tabulated.—*Geoffrey Samuel*.

9256. MELZER, V. Barevnareakce houbových plodnic. [Staining reactions with fungi.] Časopis Československých Houbařů. 1924: 1-2, 21-22, 25-26, 37-38, 51-53, 70-73. 1924.

9257. MOLISCH, HANS. Botanische Beobachtungen über Japan. 2. Über einen neuen Pflanzenfarbstoff bei *Clerodendron trichotomum* Thuby. [A new plant pigment in *C. trichotomum*.] Sci. Repts. Tohoku Imp. Univ. [Sendai] Ser. 4. 1: 73-81. 1 pl. 1924.—The blue pigment occurs either dissolved or in irregular flakes in the flesh and epidermis of the fruit. It is easily soluble in water, slowly soluble in alcohol, insoluble in xylol, ether, chloroform, and carbon disulphide. It does not give the reactions for anthocyanins, but is perhaps related to this group. The author found a sky-blue pigment in stigmas of *Monotropa uniflora*, which resembles the pigment of *Clerodendron* inasmuch as it does not redden with acids.—*Author (translated)*. Courtesy Japanese Jour. Bot.

9258. MRÁZEK, C. Z biologie a fyziologie tufových mechů. [Biology and physiology of tufa forming mosses.] Rozpravy II. Třída České Akademie 33⁶: 1924.—The author investigated the way in which tufa are formed in streams and springs in the presence of some mosses and liverworts. He takes exception to the opinion of Reichardt, Unger, and Hassack that the process is purely a physico-chemical one and holds to the view that it is due to the life activities of mosses and liverworts. Obligatory tufa-formers are *Hypnum commutatum* (*Cratoneuron commutatum*), *Eucladium verticillatum* and a liverwort, *Pellia calycina*. Experiments were carried out with *P. calycina*. The latter requires Ca. The incrustation is effected by secretion of alkaline substances in the nutritive (or natural) solution containing Ca. In cultures without Ca no rhizoids are formed, brown stains appear and finally the whole plant turns brown and dies, as in the case of higher plants without calcium.—The author applies his results to other tufa-forming plants and explains the process as a defensive adaptation in the struggle for existence with other hygrophytes.—*Malkovský*.

9259. MÜLLEROVA, L. Analyses du *Mycobacterium lacticola perrugosum*. Pub. Faculté Sci. Univ. Charles, Prague, 1924.—Glycerin supports in a nutritive medium the growth of *M. lacticola perrugosum*. At the higher concentration of glycerin the lipid content in the microbes increases. Glycerin here participates in the construction of lipoids. These lipoids are mixtures of fats and phosphatids. Growth and chemical constitution is influenced not only by quality of nutritive medium but also by temperature and time. Nitrogen in extracted microbes was always constant in spite of varying quantity of lipoids. Fresh microbes are acid-resistant and gram-positive. After extraction the stainability is less; only the granules are intensively stained. The fat extracted with ether is intensively stained; that extracted with chloroform is stained weakly and that extracted with alcohol is not stained at all. Acid-resistance and gram-positivity depend on one of these higher alcohols.—*Author*.

9260. NADSON, G. A., AND A. G. KONOKOTINA. "Fat yeasts," *Endomyces vernalis* Ludw., as a source of fat for nutrition and for technical purposes. Bull. Princip. Jard. Bot. Republ. Russe. 22: 41-51. 1923.—A 10-15 day old culture of *Endomyces* grown on beer wort at 10-12°C. contains 15-28% fat, the chief constituent of which is triolein. These yeasts can utilize the substrate more economically than beer- or pressed-yeast, when grown on molasses diluted 6 times and containing 0.5% (NH₄)₂SO₄. Urea may be used in place of the ammonium salt. Sterilized potatoes can also be used as a substrate.—*S. A. W. (Contrib. by Absts. Bact.)*.

9261. NAKAMURA, N. Über das Vorkommen von Methylmercaptan in frischer *Raphanus*-

wurzel (Daikon, *Raphanus Sativus*, L.) [Occurrence of methylmercaptan in fresh *R. sativus* roots.] *Biochem. Zeitschr.* 164: 31-33. 1925.

9262. NOVÁK, F. A. Chemické a fyzikální vlastnosti kaučuků a dnešní názory na strukturný vzorec molekuly kaučuku Para. [Chemical and physical properties of rubber and new views on the structural formula of Para rubber.] *Sborník Přírodovědecký*, Praha 1: 79-160. 1925.

9263. OBATON, F. Bletissement et rougissement chez les pommes. [Softening and red-dening of apples.] *Compt. Rend. Soc. Biol.* 93: 1140-1141. 1925.—Apples which have been bruised become soft and later become red. The appearance of the red color is associated with a diminished acidity similar to the changes which take place in ripening.—*Oran Raber*.

9264. OBATON, F. L'évolution de tréhalose chez le *Sterigmatocystis nigra* (Van Tieghem). [Formation of trehalose in *S. nigra*.] *Compt. Rend. Soc. Biol.* 93: 304-306. 1925.—When grown on a medium containing sucrose, *S. nigra* forms trehalose which increases in amount until spore formation, indicating that the trehalose behaves as a reserve substance.—*Oran Raber*.

9265. ODAKE, S. Über das Vorkommen einer Schwefelhaltigen Aminosäure im alkoholischen Extrakt der Hefe. [Occurrence of a sulphur-containing amino acid in the alcoholic extract of yeast.] *Biochem. Zeitschr.* 161: 446-455. 4 fig. 1925.—This substance is identical with the decomposition product of casein and egg-albumin discovered by Müller.—*H. D. Hooker*.

9266. PRÁT, SILVESTR. Červené barvivo *Potamogetonů*. [The red pigment in the *Potamogetonaceae*.] *Zvláštní Otisk z Preslie* 3: 23-31. 1 fig. 1923-1925.—In the young leaves of different species of *Potamogeton* are red chromoplasts which only later turn into green chloroplasts. The red pigment is deposited in very small drops in the stroma. Only the chloroplasts produce starch. Microscopical observations on the pigments in the *Potamogeton* chromoplasts are given. When leaves of *Potamogeton* are placed in chloral hydrate or in lactophenol the red pigment crystallizes. When the quantitative method of Willstätter is used for separating the pigments, we get the potamoxanthin (rhodoxanthin) in the fucoxanthin-fraction; the rhodoxanthin does not react with dilute acids. A difference in the development of the chloroplasts in different species of *Potamogeton* is discussed.—(From English summary.)

9267. PRINGSHEIM, HANS. Über die Chemie komplexer Naturstoffe. [Chemistry of complex natural substances.] *Naturwissenschaften* 13: 1084-1090. 1925.—A summary of modern studies on the chemistry of the complex polysaccharides such as starch, glycogen, inulin, hemicelluloses and cellulose, as well as the more recent studies on the chemistry of proteins.—*Orton L. Clark*.

9268. RAYMOND, ALBERT L. The mechanism of carbohydrate utilization. *Proc. Nat. Acad. Sci.* [Washington D. C.] 11: 622-624. 1925.—This is a preliminary note on a theory that is being experimentally tested. Alcoholic fermentation by enzymes is represented as follows: (a) Formation of a hexose monophosphate ester—(1) $C_6H_{12}O_6 + R_2HPO_4 = C_6H_{11}O_5 \cdot R_2PO_4 + H_2O$. (b) and (c) Cleavage into 2 triose groups, of which the one lacking phosphorus forms alcohol and carbon dioxid—(2) $C_6H_{11}O_5 \cdot R_2PO_4 = C_3H_5O_2 \cdot R_2PO_4 + (C_3H_5O_3)$; (3) $2C_3H_4O_2 \cdot R_2PO_4 = C_6H_{10}O_4 (R_2PO_4)_2$; (4) $(C_3H_5O_3) = CO_2 + C_2H_5OH$. (d) The diphosphate is hydrolyzed to hexose—(5) $C_6H_{10}O_4 (R_2PO_4)_2 + 2H_2O = C_6H_{12}O_6 + 2R_2HPO_4$. Three intermediate reactions which may accomplish (4) are outlined. Insulin or a similar substance is considered essential to (1). Carbohydrate metabolism of animals is believed to follow steps (1) and (2) above; the reactive triose ($C_3H_5O_3$) is then oxidized, or with deficient oxygen lactic acid is formed, $(C_3H_5O_3) = CH_3CHOH \cdot COOH$.—*Howard B. Frost*.

9269. RICHTER, CARL. Beiträge zur Chemie der Blütungs- oder Frühjahrs-saftes einiger Gehölze. [Chemistry of the spring sap of some woody plants.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 138-146. 1925.—*Acer* contains cane sugar. When the sap has evaporated the cane sugar can be easily obtained in crystals, whereas "birch honey" does not crystallize. The sap of *Carpinus betulus*, like that of the birch contains glucose as well as fructose. The sap of the beech contains but little sugar. The stactometry of the spring sap of some species is given in tabular form.—*J. C. Th. Uphof*.

9270. RIVIÈRE, G., ET G. PICHARD. Contribution à l'étude biologique du pommier. [The

biology of the apple tree.] Jour. Soc. Nat. Hort. France 25: 481-482. 1924.—This is a chemical study concerned especially with the glucoside, phlorizin, and malic acid. The authors believe that this glucoside is a reserve food which is used in starting growth in spring. During the growing season it is formed in the leaves and through hydrolysis furnishes glucose to the fruit. The glucose content of the fruit increases as the fruit ripens.—*H. C. Thompson.*

9271. RIVIÈRE, G., ET G. PICHARD. De la composition chimique de quelques variétés d'oignons comestible. [Chemical composition of some varieties of edible onions.] Jour. Soc. Nat. Hort. France 26: 277-278. 1925.—Analyses of 3 types show considerable differences in dry matter, ash, and reducing sugars. A so-called sweet variety possesses much larger sugar content and considerably lower dry matter content than the other varieties.—*H. C. Thompson.*

9272. RUŠNOV, PETER. Eine Betrachtung über die vermutliche Ursache des wesentlich höheren Aschengehaltes der Rinde der Holzpflanzen im vergleich zum Stamm- und Wurzelholz. [Probable reason for the higher ash content in the bark of trees than in stem and root wood.] Centralbl. Gesam. Forstw. 50: 283-289. 1924.—Bark has a much higher ash content than wood, and the proportion of calcium salts is high, often reaching 80%. It is suggested that the dilute sugar solutions originating in the leaves carry calcium and other salts in solution down through the conducting tissues of the inner bark and deposit them there when the carbohydrates are taken out to form wood tissue or reserve starch.—*W. N. Sparhawk.*

9273. SABALITSCHKA, T., UND C. JUNGERMANN. Der absolute und prozentuale Alkaloidgehalt der einzelnen Teile von *Lupinus luteus* L. während der Vegetation. [The absolute and percentage content of alkaloid in the separate parts of *L. luteus* during vegetation.] Biochem. Zeitschr. 163: 445-456. 4 fig. 1925.—The absolute content of lupinine and lupinidine in *Lupinus luteus* reached a minimum at 2 weeks and a maximum at 14, after which there was a decrease. The largest amounts were found in the leaves, less in the stems and still less in the roots. The alkaloids of the cotyledons decreased but did not disappear completely. The percentage content of alkaloids showed minima at 2, 6 and 18 weeks and maxima at 4 and 13 weeks. The percentage content in the leaves was greatest at 4 weeks, in the stems at 4 and 13 weeks, with a minimum at 6 weeks. The percentage content in the roots decreased for 6 weeks, rose to a maximum at 13, and thereafter diminished.—*H. D. Hooker.*

9274. SABETAY, S., UND L. ROSENFELD. Über Glucose-phosphorsäure. [Glucose phosphoric acid.] Biochem. Zeitschr. 162: 469-478. 1925.—Glucose monophosphoric acid obtained by hydrolysis of sucrose phosphoric acid formed crystalline cinchonidine and brucine salts. The formation of phosphorus-free glucosazone suggests that the phosphoric acid is attached to the 2nd carbon atom.—*H. D. Hooker.*

9275. SIMONNET, H., ET L. RANDOIN. La question des vitamines. III. Le facteur hydrosoluble B. Bull. Soc. Chim. Biol. 7: 678-749. 1925.—This is a résumé, without bibliography, of the present status of knowledge of the subject.—*Joseph S. Caldwell.*

9276. SKALINSKA, MARIE. Contribution à la connaissance des pigments dans le tégument des graines de *Phaseolus vulgaris*. [Pigments in the integument of seed of *P. vulgaris*.] Compt. Rend. Soc. Biol. 93: 780-782. 1925.—The common bean (Caffer variety) appears in several colors, including black, brown, violet, yellow, and yellowish brown. When analysed, the black and violet are found to be associated with anthocyanins, the yellow with "pseudobases," and the brown and yellow-brown with flavonols. These chemical substances are all related and whether one color or another appears depends not only upon the genetic factors carried but also upon external conditions such as temperature, which determines the transformation of one pigment into another.—*Oran Raber.*

9277. SPOEHR, H. A., AND PAUL C. WILBUR. Effect of disodium phosphate on hexose sugars. Carnegie Inst. Washington [D. C.] Year Book 24: 158-160. 1925.

9278. SUCHÁŘPA, R. Die pektinstoffe. [Pectin substances.] Serger & Hempel: Braunschweig, 1925.

9279. SUZUKI, N. On the indol formation of *B. influenza*. Sci. Rept. Tokyo Imp. Univ. 1: 51-52. 1922.

9280. TAMHANE, V. A. Chemical studies on safflower seed and its germination. Mem. Dept. Agric. India, Chem. Ser. 67: 1923.

9281. TILLMANS, J., UND A. ALT. Über den Gehalt der wichtigsten Proteinarten der Leb-

ensmittel an Tryptophan und ein neues Verfahren der Tryptophanbestimmung. [Tryptophane content of the more important food proteins and a new method of tryptophane estimation.] Biochem. Zeitschr. 164: 135-162. 1 fig. 1925.—The new method of estimating tryptophane in proteins is based on the reaction of protein with formol and H_2SO_4 . The percentages of tryptophane in the various proteins of wheat, rye, maize, barley, oats, rice, peas, beans, lentils and cauliflower are given.—*H. D. Hooker*.

9282. VAGLIANO, M. S. *Persistence du pouvoir antiscorbutique du sirop d'Orange*. [Retention of antiscorbutic properties by orange syrup.] Compt. Rend. Soc. Biol. 93: 602-604. 1 fig. 1925.—If to 4 parts of orange juice one adds 2 parts of sugar and 1 of water and then boils the mixture 1-2 hours in an open vessel at a temperature of 115-120°C. the antiscorbutic properties are conserved for at least 6 months. The sugar seems to protect vitamin C from the action of heat.—*Oran Raber*.

9283. VERNADSKIJ, V. I. *O chemickém složení živé hmoty v souvislosti s chemií kůry zemské*. [Chemical composition of the living substance in connection with the chemistry of the earth.] Sborník Přírodovědecký [Prah] 1: 1-16. 1925.—This is a summary of a lecture dealing in part with the chemical composition of plants. The author shows the importance of the elementary composition (atomic structure of the elements) of the organism in relation to the chemical composition of the earth (hydrosphere, atmosphere, lithosphere).—*Silvestr Prát*.

9284. VISCHER, W. *Über die moderne Kautschukgewinnung in Ostindien und über die physiologische Bedeutung des Kautschuks für die Pflanze*. [The modern way of obtaining rubber in East India and the physiological significance of rubber to the plant.] Schweiz. Apoth. Zeitg. 62: 353-355, 369-375, 389-390, 425-430. 1924.—The early history of rubber is described and the laying out of plantations. Trees 5 years old can be tapped. A knowledge of the anatomical structure of the tree is here necessary; care must be taken not to cut through the inner bark. The author goes into detail regarding the selection of plant material, plant diseases and preparation of latex. He also discusses the physiological and ecological significance of the latex, concluding that it is an excretion, whose mode of origin is still not clear, and that its ecological importance (protection against injury by animals) has only been demonstrated in a few plants.—*Charles C. Plitt*.

9285. WOLFFENSTEIN, RICHARD. *Die pflanzenalkaloide*. [Plant alkaloids.] viii + 506 p. J. Springer: Berlin, 1922.

9286. ZLATAROFF, A. *Phytobiochemische Studien II*. [Studies in plant biochemistry.] Biochem. Zeitschr. 161: 379-389. 1925.—The phosphatides of seed of *Cicer arietinum* L. were separated into 3 fractions, a lecithin pentosan, a lecithin glucose and a free lecithin. The free lecithin contained unsaturated fatty acids and betaine in place of cholin. The lecithin content of the seed was estimated as 1.76% of the dry weight.—*H. D. Hooker*.

METABOLISM (NITROGEN RELATIONS)

9287. ALSBERG, CARL L. *Protein content: A neglected factor in wheat grades*. Wheat Studies 2: 163-176. 1925-1926.—This study analyzes the existing wheat standards both from a technological and economic point of view, and discusses the effect of the present system of wheat standardization on the producer, on domestic milling, on world trade and on the general public. The standards of the U. S. A. do not directly consider protein content of wheat, whereas millers in the last decade have come to consider it seriously because bakers have come to demand flour of specified protein content. This new trade custom is having profound effects upon the grain trade, and especially concerns the wheat grower, the miller and the public. If the tendency to evaluate wheat with reference to protein content becomes general, countries able to produce high-protein wheats will enjoy an advantage in the world wheat trade over countries unable to produce such wheats, and production of high-protein varieties will tend to increase at the expense of yield per acre. The conclusion is that it is feasible to make protein content a specification in wheat grading as an important element of the country's national policy in providing for the future.—*R. Lee*.

9288. BEQUEREL, PAUL. *Les plantes carnivores*. [Carnivorous plants.] Nat. Canadien 52: 7-10. 1925.—Popular comments are made on the peculiar habits of *Saracenia*, *Nepenthes*, *Drosera*, *Diorenia*, etc.—*A. H. MacKay*.

9289. BONAZZI, AUGUSTO. On nitrification. V. The mechanism of ammonia oxidation. Jour. Bact. 8: 343-363. 1923.—Even with the most delicate tests, H_2O_2 could not be demonstrated in pure cultures of *Nitrosococcus*, nor could any pertinent data be obtained by addition of H_2O_2 to cultures. Iron was found in active cultures partly in the ferrous state. The existence of an oxidase could not be demonstrated by the guaiac test due to the presence of other compounds. The author, however, develops a theory of the oxidation of ammonia by the autotrophic *Nitrosococcus* in accordance with the conception of Bach and Chodat, whereby "iron by its mechanism of autooxidation fulfills in the nitrifying cultures the function of the peroxide, while the cells furnish the mechanism for the liberation of the oxygen thus bound."—C. E. Skinner.
9290. BURKE, EDMUND. The influence of nitrate nitrogen upon the protein content and yield of wheat. Jour. Agric. Res. 31: 1189-1199. 1925.
9291. CHEVALIER, G. Essais sur l'utilisation de l'urée synthétique comme engrais azoté. [Synthetic urea as a nitrogenous fertilizer.] Prog. Agric. et Vitic. 80: 257-260. 1 fig. 1923.—Pot cultures of wheat gave satisfactory results with urea as compared with $NaNO_3$, $(NH_4)_2SO_4$, dried blood, tankage, calcium cyanamide, and the control.—E. L. Proebsting.
9292. CHODAT, FERNAND. Contribution à l'étude du gonflement des protides. [The swelling of proteins.] Compt. Rend. Soc. Phys. Hist. Nat. Genève 41: 8-11. 1924.
9293. CSONKA, F. A., H. S. BERTON, AND D. B. JONES. Proteins of timothy and orchard grass pollen and their relation to vernal hay fever. Proc. Soc. Exp. Biol. and Med. 23: 14-16. 1925.
9294. FALK, I. S., AND M. F. CAULFIELD. Some relation between hydrogen-ion concentration and antigenic properties of proteins. Proc. Soc. Exp. Biol. and Med., 20: 199-201. 1922-1923.—The recent work of J. Loeb and others is referred to. The authors wish to determine whether certain biological properties of the proteins were also affected by hydrogen and hydroxyl-ions over the range of concentrations which affects other properties. Gelatin, hen ovalbumin, and plant protein were used. Gelatin introduced intravenously gave no anaphylaxis, whether in acid, isoelectric, or alkaline solution. Hen ovalbumin gave anaphylaxis at its isoelectric point, and it was found that a much more potent antigen is produced in acid solutions than in isoelectric or alkaline solutions. Also with larger sensitizing doses of protein, acute anaphylaxis can be produced by the protein at any of the 3 H-ion concentrations studied. Similar results were found in guinea pigs passively sensitized with sera of rabbits and actively immunized with the acid, isoelectric, and alkaline solutions of ovalbumin and also of plant protein. Other experiments to determine between anaphylactic and precipitating antibodies show that modifications in the H-ion concentration may simultaneously affect anaphylactogenic and precipitinogenic potencies of different proteins differently.—M. B. T. (Contrib. by Absts. Bact.).
9295. FRED, E. B., AND W. H. PETERSON. Forms of nitrogen in pure cultures of algae. Bot. Gaz. 78: 324-328. 1925.—By use of a special agar synthetic medium the authors procured pure cultures of *Chlorella* and of *Scenedesmus* from centrifugalized concentrates of Lake Mendota plankton. "The nitrogen in the dried algae is largely insoluble and amounts to 7.4% on the ash-free basis. About 25% can be extracted with water and is made up chiefly of protein, amino, and peptide nitrogen."—T. D. B. (Contrib. by Absts. Bact.).
9296. HANKE, M. T. The histidine and tyrosine content of a number of proteins. Jour. Biol. Chem. 66: 489-493. 1925.—The determination of these in a number of plant and animal proteins was by a new colorimetric method.—Geo. B. Rigg.
9297. HOCHAPFEL, HANS HEINZ. Untersuchungen über die C- und N-Quellen einiger Fusarien. [Studies on the C- and N- sources of a few Fusaria.] Centralbl. Bakt. [etc.], II Abt. 64 (8/14): 174-222. 3 fig. 1925.—No distinct difference has been found in the utilization of C and N sources by saprophytic and parasitic Fusaria. They grow well on sugars in a manner similar to known saprophytic fungi. They differ, however, in sensitivity towards the H and OH-ions in a manner similar to the Mucorales and Aspergillaceae. The change in the original pH value as a result of growth makes it impossible to determine the absolute value of a C source. Most species of *Fusarium* are omnivorous. Many C sources are well assimilated; the same is true of various N sources; however, ammonium salts exert upon many species an

unfavorable effect through their anions. Spore germination will take place at a wide range of pH values (2-11) and concentrations of sugar. This great adaptability of *Fusaria* accounts for the fact that they can attack various plants.—*S. A. Waksman*.

9298. HOFFMAN, W. F. An alcohol-soluble protein isolated from polished rice. *Jour. Biol. Chem.* 66: 501-504. 1925.—Rice contains only a trace of alcohol-soluble protein (protamine), while other cereals contain a considerable quantity.—*Geo. B. Rigg*.

9299. HUCKER, G. J., AND L. F. RETTGER. The utilization of the hydrolytic decomposition products of protein by the micrococci. *Centralbl. Bakt. [etc.] II Abt.*, 65: 118-128. 1925.—Micrococci utilize readily the simple polypeptides and amino acids of the commercial peptone mixture (Difco), but not the non-dialyzable (proteose) fraction.—*S. A. W. (Contrib. by Absts. Bact.)*.

9300. HUCKER, G. J., AND L. F. RETTGER. The utilization of non-protein sources of nitrogen by the micrococci. *Centralbl. Bakt. [etc.] II Abt.*, 65: 273-277. 1925.—Micrococci utilize readily complex organic nitrogenous compounds and ammonium salts as sources of N, but they cannot utilize chemically pure amino acids. With ammonium phosphate as a source of N, the saprophytic species produce a luxuriant growth, but the parasitic strains fail to grow.—*S. A. W. (Contrib. by Absts. Bact.)*.

9301. JODIDI, S. L. Nitrogen metabolism in etiolated corn seedlings. *Jour. Agric. Res.* 31: 1149-1164. 1925 [1926].—In this study of seed germination etiolated corn seedlings only have been used. During the first stage of germination there is probably no essential difference between seedlings grown in the presence or in the absence of light. As soon, however, as chlorophyll develops in the seedlings there is, along with the degradation of the seed proteins, considerable accumulation of carbohydrates in the seedlings, by photosynthesis, which renders the estimation and isolation of the various nitrogenous disintegration products very difficult and hence, not quite accurate. On the other hand, etiolated seedlings ordinarily use up the seed carbohydrates from which they derive the continual supply of energy necessary for vital activities and, therefore, represent a concentrated mass of nitrogen compounds. The results obtained in this investigation have led to the following conclusions: By the process of germination, in the absence of light, the proteins present in the corn seed are rapidly undergoing disintegration, whereby, within 8 days, up to 48% of them are converted into water-soluble diffusible N compounds. The disintegration takes place through the activity of proteolytic enzymes which are to be considered as pre-existent in the resting corn seed, since the latter was shown by the writer to contain polypeptides and amino acids, degradation products of proteins. From the beginning of corn germination up to the 8th day there is a steady increase in acid amid N and a decrease in human N. This is interpreted to mean that acid amids increase at the expense of certain amino acids which are known to contribute to the formation of human N, such as tryptophane and tyrosine. During the first 8 days of corn germination there is also a steady rise in amino N and a diminution in peptid N. This is taken to mean that amino acids increase at the expense of polypeptides, which, along with proteoses, are among the first degradation products of proteins. The N distribution of the aqueous extracts of the etiolated corn seedlings, calculated to the water-soluble N, is as follows: After 2 days: 11.44% of amid N, 19.51% of human N, 20.83% of amino N, and 34.06% of peptid N. After 4 days: 15.56% of amid N, 12.27% of humin N, 27.82% of amino N, and 26.77% of peptid N. After 8 days: (in upsun-treated seedlings) 18.08% of amid N, 6.45% of humin N, 29.55% of amino N, and 27.52% of peptid N.

9302. JONES, D. BREESE. The chemistry of proteins and its relation to nutrition. *Amer. Jour. Public Health* 15: 953-957. 1925.—The proteins of the navy bean contain 0.6-0.7% cystine, thus showing that the cystine deficiency of these proteins is a type of indigestibility and not of real absence. The digestibility can be improved somewhat by cooking. The protein of wheat bran has been found well supplied with lysine, which is deficient in gliadin. Moreover, in feeding tests with rats in which bran constituted the sole source of protein, the protein was found to be digestible and adequate. In the light of this result certain propaganda to the effect that bran is indigestible by animals other than ruminants is criticised.—*C. A. Ludwig*.

9303. KRAUS, E. J. Soil nutrients in relation to vegetation and reproduction. *Amer. Jour.*

Botany 12: 510-516. 1925.—The effects of soil nutrients on growth and differentiation are complex and have been studied in various ways. The carbohydrate: N ratio has often been found to be closely associated with the condition of the plant, but here the form in which the N occurs, rather than its total amount, is important. Kraus and Kraybill, with tomatoes, found that abundance of nitrate N was related to a highly vegetative state and that its absence resulted in a non-vegetative condition, but they suggested that nitrate N might be only a non-metabolized reserve and that the effective forms might be quite different. Both through experiments in photoperiodism and in removing or retaining fruits on the plant, it has been found possible to vary the vegetative and reproductive behavior of plants without altering the nutrient medium. The results of these experiments indicate that it is amino N rather than nitrates which is associated with the vegetative condition. Studies of the rôle of the various chemical forms of all the essential elements are greatly needed.—*E. W. Sinnott.*

9304. LANCEFIELD, R. C. Antigenic relationships of the nucleo-proteins from the gram-positive cocci. *Proc. Soc. Exp. Biol. and Med.*, 22: 109-110. 1924.—The author isolated from several strains of non-hemolytic streptococci substances similar in chemical and biological behavior to the "specific soluble" substance of pneumococci. The precipitin reactions with the specific soluble substances are highly specific and show close agreement with agglutination reactions. The nucleo-proteins seem to be serologically similar. The tests indicate that the hemolytic and non-hemolytic streptococci and pneumococci all contain a nucleo-protein with common antigenic properties.—*R. K. (Contrib. by Absts. Bact.).*

9305. M., L. B. [Rev. of: OSBORNE, T. B. *The vegetable proteins*. xiii + 154 p. Longmans, Green & Co.: New York, 1924.] *Amer. Jour. Sci.* 7: 342. 1924.—General statements are made concerning the work, the author of which has contributed 110 papers to the literature of the subject.—*T. J. Fitzpatrick.*

9306. OTTENSOOSER, F. Ueber die irreversible [Thermolabilität spezifischer Präzipitate. [The irreversible thermolability of specific precipitates.] *Zeitschr. Immunitätsf. u. Exper. Therap.* I. Teil. Originale, 43: 91-94. 1925.—The specific precipitates formed by mixing beef serum, swine serum, horse serum, and proteins of yeast and takadiastase with their respective antisera were found to be irreversibly thermolabile. This is considered to be further evidence that these precipitates are composed of lipoid and globulin.—*S. B-J. (Contrib. by Absts. Bact.).*

9307. POPPER, H., UND J. WARKANY. Ueber den Tyrosin und Tryptophangehalt von Bouillon und Asparagintuberkelbazillen. Ein Beitrag zur Frage der Zyklopoese durch Bakterien. [The tyrosine and tryptophane content of tubercle bacilli grown in bouillon and asparagin.] *Zeitschr. Tuberkulose* 43: 368-371. 1925.—The amount of tyrosine and tryptophane in the tubercle bacilli was found to be constant whether or not these amino acids were present in the culture medium. The author concludes that the organism is capable of synthesizing aromatic amino acids from aliphatic—a character which it has in common with higher plants.—*Louise Dossdall.*

9308. RANKER, E. R. Determination of total nitrogen in plants and plant solutions: a comparison of methods with modifications. *Ann. Missouri Bot. Gard.* 12: 367-380. 1 pl. 1925.—"For the determination of total N in plants and plant solutions the official salicylic-thiosulphate method has proved inadequate," inaccuracies being due to the presence of water in the sample to be analyzed. A modification of this method is proposed and details of procedure are given.—*S. M. Zeller.*

9309. RIPPEL, A. Notiz über die Verarbeitung von Thioharnstoff durch *Aspergillus niger* v. Tgh. [Utilization of thiourea by *A. niger*.] *Biochem. Zeitschr.* 165: 473-474. 1925.—Thiourea was gradually attacked by *Aspergillus niger*, the S being oxidized to H_2SO_4 .—*H. D. Hooker.*

9310. SAKAGUCHI, SHOYO. Über eine neue Farbenreaktion von Protein und Arginin. [A new color reaction of protein and arginin.] *Jour. Biochem. Tokyo* 5: 25-31, 1925.—Protein or arginin in solution made strongly alkaline with NaOH gives a beautiful red color on addition of 2 drops of 0.1% alpha-naphthol in 70% alcohol and a few drops of 5% sodium hydrochlorite. The reaction is definite for 1 part in 50,000 of protein or 1 in 1,000,000 of arginin, glucosyamin or alpha-guanidin-butyric acid. The nature of the reaction and the results of analysis of the colored product are stated.—*Joseph S. Caldwell.*

9311. SCHRYVER, S. B., H. W. BUSTON., AND D. H. MUKHERJEE. The isolation of a product of hydrolysis of the proteins hitherto undescribed. *Proc. Roy. Soc. London B.* 98: 58-65. 1925.—This base, provisionally called oxylysine, differs from other basic products of protein hydrolysis in yielding a barium carbonate insoluble in water. In addition to animal proteins it has been found in alkali-soluble oat-protein, cabbage-leaf albumin, and hemp-seed edestin.—*P. B. Sears.*

9312. TAKAHASHI, EIJI, AND TADAO ITAGAKI. On the proteins of the adzuki-bean, (*Adzukiaria subtrilobata.*) *Jour. Biochem. Tokyo* 5: 311-319. 1925.—The variety Maruba was employed. It contains 25.69% of protein, 24% of which was extractable with 10% NaCl solution. Two globulins, designated as β_1 and β_2 globulin, closely resembling the β -globulin isolated by Jones, Finks and Gersdorff (*Jour. Biol. Chem.* 51: 103. 1922) from *Phaseolus angularis*, were present. That designated as β_1 -globulin is the principal protein of the Adzuki bean.—*Joseph S. Caldwell.*

METABOLISM (ENZYMES, FERMENTATION)

9313. ANDO, K. On the substance promoting the growth and fermentative activity of yeasts. *Sci. Rept. Gov. Inst. Infect. Diseases Tokyo Imp. Univ.* 3: 17-36. 1924.

9314. ARMSTRONG, H. E. Studies on enzyme action. XXIV. The oxidase effect and the phenomena of oxidation in general: carbonic oxide. *Proc. Roy. Soc. London B* 98: 202-206. 1925.—The inhibition of oxidation by oxidizable substances is discussed and is held to be due to the formation of mutually antagonistic peroxides, producing a reversible system. Oxidases, although catalysts, are not in general selective ones and hence are not to be regarded as true enzymes. The importance of inhibition of oxidation as a regulative mechanism in organisms is stressed. The problem of such regulation may be approached by studying regulators of known chemical structure, for example, adrenalin.—*P. B. Sears.*

9315. BIOXO, BARON DE. Études de fermentation en Roussillon. [Studies in fermentation.] *Prog. Agric. et Vitic.* 84: 113-114. 1925.—This is a reply to Semichon, presenting data to show that ammonium phosphate does not hasten fermentation.—*E. L. Proebsting.*

9316. BODNAR, J., C. SZEPESSY, UND J. FERENCY. Die Anwendung der Neubergschen Acetaldehyd-Abfangmethode bei der alkoholischen Gärung höheren Pflanzen. [The application of Neuberg's acetaldehyde recovery method to alcoholic fermentation in higher plants.] *Biochem. Zeitschr.* 165: 16-22. 1925.—Acetaldehyde was recovered as the sulphite derivative from peas immersed in sodium or calcium sulphite. Larger yields were obtained when glucose was added, or when the seed were ground. The ratio of alcohol (including aldehyde calculated as alcohol) to CO_2 averaged 1.044.—*H. D. Hooker.*

9317. CASTELLANI, ALDO. Biochemical characters of certain bacteria. *British Med. Jour.* 2: 734-735. 1925.—Two organisms growing in symbiosis may present certain biochemical changes which neither of them show when grown separately. This is illustrated by the fermentation of certain carbohydrates. For example, *Bacillus typhosus* attacks maltose, mannitol, and sorbite with production of acid but not gas. Morgan's bacillus does not ferment these substances at all. Mixed cultures of the 2 organisms show both acid and gas production. In a similar way *B. typhosus* plus *Proteus* produced acid and gas from maltose, mannitol, and sorbite. Additional experiments with the Flexner dysentery bacillus and the foregoing organisms are given. Not all combinations of organisms will show this symbiotic gas production. One of the conditions which must be fulfilled seems to be that the 2nd organism, although it may not attack the test substance, such as mannitol, must be capable of producing acid and gas, from glucose.—*S. A. K. (Contrib. by Absts. Bact.).*

9318. CHODAT, FERNAND. De l'action de l'albumine sur la coagulation du lait par la chymase végétale. [Action of albumen on the coagulation of milk by vegetable chymase.] *Compt. Rend. Soc. Phys. Hist. Nat. Genève* 40: 24-26. 1923.

9319. CHODAT, R., ET F. WYSS. Nouvelles recherches sur la tyrosinase. [Further researches on tyrosinase.] *Compt. Rend. Soc. Phys. Hist. Nat. Genève* 39: 22-26. 1922.

9320. EULER, HANS V. Chemie der Enzyme. Zweite, nach schwedischen Vorlesungen vollständig umgearbeitete Auflage. II. Teil. [Chemistry of the Enzymes.] 2nd. ed. Part 2. vii + 314 p. J. F. Bergmann: Munchen und Wiesbaden, 1922.

9321. EULER, H. v. *Enzymchemische Beiträge zur Kenntnis des gekoppelten Fett- und Kohlenhydratstoffwechsels. I.* [The enzyme chemistry of associated fat and carbohydrate metabolism.] *Biochem. Zeitschr.* 164: 18-22. 1925.—Carbon dioxide production during fat respiration in expressed sap of sterilized *Brassica Napus* seed was not accelerated by cozymase. Fat synthesis and fat oxidation are discussed.—*H. D. Hooker.*

9323. HÄGLUND, E., UND A. M. AUGUSTSON. *Über die Abhängigkeit der alkoholischen Gärung von der Wasserstoffionenkonzentration. II.* [The dependence of alcoholic fermentation on H-ion concentration.] *Biochem. Zeitschr.* 166: 234-241. 5 fig. 1925.—The optimum H-ion concentration for the fermentation of glucose by dried yeast in the presence of phosphoric acid was pH 5.8 and for the fermentation of maltose, pH 6.2. In the presence of lactic and acetic acid the optimum was pH 5.8. The optimum did not change with time, indicating rapid penetration of the acids.—*H. D. Hooker.*

9324. HARDEN, ARTHUR. *Alcoholic fermentation. 3rd ed. iv + 194 p.* Longmans, Green & Co.: London, 1923.

9325. HATTORI, SHIDZUO. *Untersuchungen über das Acaciin, ein neues Flavonglykosid aus den Blättern von Robinia Pseudacacia, L.* [Studies of acaciin, a new flavone glucoside from the leaves of *R. pseudacacia*, L.] *Acta Phytochimica* 2: 99-112. 1 pl., 2 fig. 1925.—When leaves of black locust are extracted for some time with hot water, there settles out of the cooled extract a gelatinous green mass. From this the author has extracted a glucoside, acaciin, which yields on hydrolysis 2 molecules of rhamnose and 1 of the flavone acacetin. This is known to be the 4-methyl ether of apigenin. The usual proofs of structure of the new compound were supplemented by spectrographic studies.—*H. S. Wolfe.*

9326. HATTORI, YAJIRO. *Das Verhalten der α - und β -glucose zur Hefe- und Taka-invertase.* [The behavior of α - and β -glucose toward yeast and taka-invertase.] *Jour. Biochem. Tokyo* 5: 39-47. 1925.—The author has previously shown that the α - and β -methylglucosides have different inhibiting effects upon the action of invertase (*Biochem. Zeitschrift* 150: 150-158. 1924). He now finds that α -glucose has no inhibiting effect upon yeast invertase, β -glucose has a marked effect which is directly dependent for its amount on the concentration of the glucose added. Taka-invertase is not inhibited by β -glucose, but α -glucose is strongly inhibitory in a degree dependent upon its concentration. The kinetics of inversion of cane-sugar by yeast and by taka-invertase are therefore not identical and the process is more complicated than has been supposed.—*Joseph S. Caldwell.*

9327. IWANOFF, N. N. *Über die Trehalose und Trehalase bei Myxomyceten.* [Trehalose and trehalase in Myxomycetes.] *Biochem. Zeitschr.* 162: 455-458. 1925.—Trehalose was found in the spores of *Reticularia Lycoperdon*, being 2.19% of the dry weight. Trehalase was found in the unripe fruiting bodies of *Lycogola*.—*H. D. Hooker.*

9328. IWATSURU, R. *Über Polysaccharidspaltung durch Hefe.* [Hydrolysis of polysaccharides by yeast.] *Biochem. Zeitschr.* 166: 409-413. 1925.—Inulin was hydrolyzed to fructose by acetone yeast.—*H. D. Hooker.*

9329. KAYSER, E., ET H. DELAVAL. *Contribution à l'étude des levures de vin.* [Contribution to the study of wine yeast.] *Prog. Agric. et Vitic.* 82: 283-285. 1924.—Different strains of yeast are compared as to percentage of sugar fermented and composition of the product.—*E. L. Proebsting.*

9330. KIESEL, ALEXANDER. *Études sur la nutrition de l'Utricularia vulgaris.* [Studies on the nutrition of *U. vulgaris*.] *Ann. Inst. Pasteur* 38: 879-891. 1924.—There is considerable conflicting evidence as to whether carnivorous plants secrete some proteolytic enzyme which decomposes the bodies of trapped animals, or whether this decomposition is due to the activities of bacteria. In the case of *U. vulgaris*, the author found that no proteolytic enzyme is secreted. The liquid contained in the bladders of this plant was collected by means of a capillary pipette, and then its effect was tried on fibrin, boiled white of egg, and gelatin, in hanging drops, test tubes, and petri dishes. Proteolysis occurred in no case when toluene was added as disinfectant, but decomposition took place in every instance when no toluene was used. In the latter case, bacteria were found to be present in large numbers. From these results, the author concludes that, in the case of *U. vulgaris*, the decomposition of the bodies of the trapped animals is due to bacterial activity and not to the action of a proteolytic ferment secreted by the plant.—*A. G. Plakidas.*

9331. KLUYVER, A. J., H. J. L. DONKER, UND F. VISSER'T HOOFT. Über die Bildung von Acetylmethylcarbinol und 2, 3-Butylenglykol im Stoffwechsel der Hefe. [The formation of acetyl-methyl-carbinol and of 2, 3-butylene glycol in yeast metabolism.] Biochem. Zeitschr. 161: 361-378. 1925.—These substances, the presence of which was determined by a modification of Lemoigne's method, were formed from accumulated acetaldehyde in the ordinary fermentation of fructose by yeast. They were also formed in glucose fermentation when H acceptors such as S or methylene blue were present. Aeration prevented their formation.—H. D. Hooker.

9332. LAKELA, OLGA. Hydrolytic enzymes in *Phormidium laminosum*. Bot. Gaz. 80: 102-106. 1925.—Material studied was from a hot spring (73°C.) in Yellowstone National Park, U. S. A.

9333. LEHMANN, JORGEN. Über die Einwirkung verschiedener Faktoren auf Oxydationsenzyme im Samen von *Phaseolus vulgaris*. Ein Beitrage zur Kenntnis der Dehydrogenasen. [Influence of different factors on oxidation enzymes in the seed of *P. vulgaris*. The dehydrogenoses.] Bot. Notiser [Lund] 1922: 289-312. 1922.

9334. LIEBEN, F., UND D. LÁSZLO. Über den Einfluss einiger Ionen auf die Zuckerassimilation durch sauerstoffgeschüttelte Hefe. [Influence of certain ions on sugar assimilation by aerated yeast.] Biochem. Zeitschr. 162: 278-288. 1925.—Sugar assimilation by aerated yeast was not affected by the anions, Cl, NO₃, or by the cation NH₄. It was increased by the anions, SO₄, CNS, I, and by the cations, K, Ca, Mg. It was decreased by the anion F and by K₂SO₄ and KCNS.—H. D. Hooker.

9335. LIPSKA, IRENE. L'influence des races de levures sur la fermentation et sur la composition chimique des vins de fruits. (French Summary.) [The influence of race of yeast upon fermentation and composition of fruit wines.] Acta. Soc. Bot. Poloniae 3¹: 1-28. 1925.

9336. LO PRIORE, G. Fermentazione delle castagne nei ricci. Loro sbucciatura meccanica. [Fermentation of chestnuts in the bur. Peeling them by machinery.] L'Alpe 12: 138-143. 1925.—This deals with fermentation of chestnuts in the burs, gathered in piles while still moist and left to stand for 10 days. Fermented chestnuts have a brighter pericarp than unfermented, with darker basal streaks. The fermentation is due to a complicated and little understood chemical and biological process, which results in an increase in weight of the seed. The weight of the skin diminishes as a result of loss of water, and the proportion of insoluble substance is thereby increased, rendering the skin more resistant to attacks of parasites, hence fermented chestnuts keep better. Chestnut skins furnish a considerable quantity of first class tanning material.—R. Ciferri (translated).

9337. LUDWELL, W. Why sugar deteriorates. Australian Sugar Jour. 17: 438. 1925.—According to the author, "(1) The deterioration of raw sugars is almost exclusively confined to changes in the composition of the films surrounding the sugar crystals; (2) for sugars to conform to the 'factor of safety' they must be crystallized from syrups of such purity as to yield molasses films of a density which is beyond the limits in which mold growth is possible; (3) the 'factor of safety' to which raw sugars must conform in order to be insusceptible to deterioration varies with the species and numbers of micro-organisms present; (4) the 'factor of safety' is inapplicable to washed sugars and to those that have already undergone deterioration, and also to mechanical mixtures of sugars of unsafe and safe 'factors,' (5) under the 3-massecuite system the sugar made from the high purity syrup is likely to prove more susceptible to deterioration than the sugars made from the mixed massecuities."—Nellie E. Fealy.

9338. MAYO, J. K. The enzymes of *Stereum purpureum*. New Phytol. 24: 162-171. 1925.—The following enzymes were found in active extracts of moist living tissues of the fructifications and pure-culture mycelium of *Stereum purpureum*: diastase, inulase, glycogenase, invertase, raffinase, emulsin, pectinase, tyrosinase, and oxidase. Maltose, protease, and reductase were tested for, but not found.—I. F. Lewis.

9339. MEYERHOF, O. Über den Einfluss des Sauerstoffs auf die alkoholische Gärung der Hefe. [The influence of oxygen on alcoholic fermentation by yeast.] Biochem. Zeitschr. 162: 43-86. 5 fig. 1925.—Simultaneous estimation of O₂ consumption and CO₂ production under aerobic and anaerobic conditions showed that the respiration of 1 molecule of sugar

protected 4-6 molecules from fermentation. The respiration of pressed yeast in phosphate solution was $10 \text{ mm}^3 \text{ O}_2$ per mg. dry weight per hour and 8-10 times this in glucose-phosphate solution. Fermentation under anaerobic conditions was $250\text{--}300 \text{ mm}^3 \text{ CO}_2$ per mg. dry weight per hour but $60\text{--}100 \text{ mm}^3$ under aerobic conditions. Addition of HCN under aerobic conditions increased fermentation 3-4 times, and decreased it slightly under anaerobic conditions. The respiration of brewery and wine yeast in glucose-phosphate solution was only 1-2 times that in phosphate alone. Anaerobic fermentation was about 200 mm^3 and not much less under aerobic conditions, the rate of respiration being low. In wild yeasts respiration in sugar solution was so great that fermentation under aerobic conditions was practically inhibited. By prolonging fermentation in mineral-sugar solution for 15 hours, the oxidation capacity of the brewery yeasts was increased so that they behaved like pressed yeast. Ethyl alcohol, acetaldehyde, acetic acid, pyruvic acid, lactic acid and methylglyoxal increased respiration in the same manner as sugar. Related compounds and acetoin, acetaldo, etc., had no effect. The respiratory quotient for ethyl alcohol was 0.35, indicating oxidation back to carbohydrate. For every molecule oxidized completely, about 3 were resynthesized to sugar. Only a part of the carbohydrate protected from fermentation under aerobic conditions was assimilated. The effect of O_2 in reducing fermentation by acetone yeast, etc., is attributed to the oxidation of some factor affecting fermentation. No fixed relation was found between the amount of respiration and inhibition of fermentation as with living yeast and the intermediary products of sugar fermentation were not resynthesized to sugar.—*H. D. Hooker.*

9340. MIR, E. *Traitement préventif de la casse blanche par un mode rationnel de fermentation.* [Prevention of opalescence of wine by a rational method of fermentation.] *Prog. Agric. et Vitic.* 78: 202-206. 1922.

9341. MUHLEMAN, GEORGE W. The pectinase of *Sclerotinia cinerea*. *Bot. Gaz.* 80: 325-330. 1925.—The methods used in preparing the culture media, in inoculating with spores and mycelium, in growing the fungus, and in preparing an active pectinase solution are given. No pectinase was found in the culture medium on which *Sclerotinia cinerea* had grown. The color of the felts is said to be a good index of the activity of the pectinase solution which may be prepared.—*S. G. Lehman.*

9342. NAKASHIMA, R. *Über die Verdaulichkeit der Desaminoproteine durch proteolytische fermente.* [Digestibility of deaminized protein by proteolytic enzymes.] *Jour. Biochem. Tokyo* 5: 293-310. 1925.—Casein, zein, and edestin were deaminized by the method of Dunn and Schmidt. The optimal acidity for digestion of the deaminized products by pepsin and trypsin is displaced, in comparison with that for the natural protein, toward the acid and the alkaline sides, respectively, by the effect of the deaminizing process. When optimal conditions for action are provided, the digestibility of the deaminized proteins is not decreased.—*Joseph S. Caldwell.*

9343. NEUBERG, C., UND G. GORR. *Über den Mechanismus der Milchsäurebildung bei Bakterien.* [Mechanism of lactic acid production by bacteria.] *Biochem. Zeitschr.* 162: 490-495. 1925.—Methylglyoxal was completely converted to racemic lactic acid by *B. coli*. The course of sugar fermentation is therefore much the same as with yeast. Two molecules of methyl glyoxal are converted to lactic acid while 2 more are being oxidized to pyruvic acid, molecular H being liberated at the same time. The pyruvic acid gives rise to CO_2 and acetaldehyde from which acetic acid and alcohol are produced as in alkaline yeast fermentation.—*H. D. Hooker.*

9344. NEUBERG, C., UND G. GORR. *Über den Mechanismus der Milchsäurebildung bei Bakterien. II.* [The mechanism of lactic acid formation by bacteria.] *Biochem. Zeitschr.* 166: 482-487. 1925.—Methylglyoxal was quantitatively converted to lactic acid by *Lactobacillus* and *Bacillus propionicus*.—*H. D. Hooker.*

9345. NEUBERG, C., UND A. GOTTSCHALK. *Über Apozymase und Cozymase. Zur Lehre von der Phosphorylierung.* [Apozymase and cozymase in relation to phosphorylation.] *Biochem. Zeitschr.* 165: 244-256. 1925.—Fresh yeast was able to form only traces of hexose-phosphate. Addition of toluol increased the esterification. Dried bottom yeast gave quantitative yields of hexose-phosphate. The phosphorylation capacity was lost by extraction with water but restored by addition of boiled yeast (cozymase). Dried top yeast failed to esterify sugars

even on addition of cozymase. Acetone preparations of bottom yeast behaved like dried bottom yeast. Acetone preparations of top yeast were able to esterify sugars quantitatively when cozymase was added. Phosphoration depends on cozymase and a constituent of zymase (apozymase). Muscle tissue was found to contain cozymase.—*H. D. Hooker.*

9346. NEUBERG, C., UND M. KOBEL. Vergleichende Versuche über die zellfreie Vergärung von Hexose-di-phosphorsäure, Glucose, Fructose, Saccharose, sowie Invertzucker [Comparative experiments on cell-free fermentation of hexose diphosphate, glucose, fructose, sucrose and invert sugar.] *Biochem. Zeitschr.* 166: 488–496. 1925.—The magnesium salt of hexose di-phosphate was fermented more slowly by yeast than glucose, fructose, sucrose or invert sugar in the presence of inorganic phosphate. Mixtures of the sugars with hexose di-phosphate fermented more slowly than equimolecular solutions of the free sugars. More CO₂ was produced by a mixture of fructose and the hexose di-phosphate than by the same amount of fructose and hexose di-phosphate fermented separately. This increased production of CO₂ did not result from fermentation of the hexose di-phosphate, as equal production was obtained when the hexose di-phosphate was added in very small amounts. Dilute hexose di-phosphate increased fermentation when equimolecular inorganic phosphate had little effect. Inorganic phosphate in sufficient amount to phosphorylate all the sugar present inhibited fermentation. Small amounts of fructose activated the fermentation of hexose di-phosphate.—*H. D. Hooker.*

9347. NEUBERG, C., UND C. OPPENHEIMER. Zur Nomenklatur der Gärungsfermente und Oxydasen. [Nomenclature of fermentation enzymes and oxydases.] *Biochem. Zeitschr.* 166: 450–453. 1925.—Fermentation and oxidation enzymes are grouped together as “desmolases.” “Oxido-reductases” correspond to Wieland’s dehydrases. Oxidases activate oxygen. Aldehydes are dehydrated by aldehydrases, such as acetaldehydrase, benzaldehydrase, etc. Zymase is considered to be a mixture of hexase which acts on the hexose, phosphatase, aldehydrase, ketonaldehydmutase and carboxilase. It also includes carboligase. The fermenting enzymes without cozymase are termed apozymase.—*H. D. Hooker.*

9348. NEUBERG, C., UND G. PERLMANN. Verlauf der alkoholischen Zuckerspaltung in Gegenwart von Schwefelwasserstoff und Cyanwasserstoff. [The course of alcoholic sugar cleavage in the presence of hydrogen sulphide and hydrogen cyanide.] *Biochem. Zeitschr.* 165: 238–244. 1925.—Alcoholic fermentation by zymase was greatly retarded by hydrogen cyanide and by hydrogen sulphide. Zymase was not destroyed, only the time required to ferment a given amount of sugar being increased.—*H. D. Hooker.*

9349. NEUBERG, C., UND S. SABETAY. Die enzymatische Spaltung der Saccharose-Phosphorsäure in Fruchtzucker und Glucose-Phosphorsäure. [The enzymatic cleavage of sucrose phosphoric acid into fructose and glucose phosphoric acid.] *Biochem. Zeitschr.* 162: 479–483. 1925.—Phosphatase-free invertase solution hydrolyzed sucrose phosphoric acid to fructose and glucose phosphoric acid.—*H. D. Hooker.*

9350. NEUBERG, C., UND F. WINDISCH. Über die Essiggärung und die chemischen Leistungen der Essigbakterien. [Vinegar fermentation and the chemical performance of vinegar bacteria.] *Biochem. Zeitschr.* 166: 454–481. 1925.—*Bacterium ascendens*, *B. pasteurianum* and *B. xylinum* formed acetic acid and alcohol by dismutation from acetaldehyde under sterile conditions. The alcohol is then oxidized to acetaldehyde. *B. coli*, *B. lactis aerogenes* and *Bacillus propionicus* likewise formed acetic acid and alcohol from acetaldehyde by dismutation. Vinegar bacteria also acted on pyruvic and oxalacetic acid. Since they do not ferment sugar, they contain zymase-free carboxylase.—*H. D. Hooker.*

9351. POPPER, H. Über die Einwirkung von Adrenalin und verwandter Substanzen auf die Selbstgärung der Hefe. [Influence of adrenalin and related compounds on yeast autolysis.] *Biochem. Zeitschr.* 162: 271–277. 1925.—Adrenalin in a concentration of 1:20,000 increased CO₂ production 30% from aerated yeast undergoing autolysis. Pyrocatechol, resorcinol and pyrogallol had a similar effect; hydroquinone was without effect. Glucose fermentation by yeast was not affected. Colorimetric estimation indicated what adrenalin and pyrocatechol were not affected during autolysis.—*H. D. Hooker.*

9352. PRINGSHEIM, H., UND J. LEIBOWITZ. Über die Maltase des Gerstenmalzes. [Maltase of barley malt.] *Biochem. Zeitschr.* 161: 456–458. 1925.—A sample of dried malt

was found to contain a maltase active at pH 3.-7.5, with a maximum activity at pH 4.5-5.—*H. D. Hooker.*

9353. PRINGSHEIM, H., A. GENIN, UND R. PEREWOSKY. Über die Trennung der Fermente des Gerstenmalzes. [The separation of barley malt enzymes.] *Biochem. Zeitschr.* 164: 117-125. 1925.—At pH 8 in 20-40% alcohol, mannobiase, cellulbiase and maltase of barley malt were adsorbed by kaolin or aluminum hydroxide. Amylase, mannanase and lichenase remained in the alcoholic solution.—*H. D. Hooker.*

9354. RUSCHMANN, G., UND W. RAVENDAMM. Die Flachsröste mit *Plectridium pectinovorum* (Bac. amylobacter A. M. et Bredemann) und *Bacillus felsineus* Carbone. [The retting of flax with *P. pectinovorum* and *B. felsineus*.] *Centrabl. Bak. [etc.] II Abt.* 65: 43-58. 1925.—This is a continuation of studies previously published on the retting of flax by *B. felsineus* and *B. amylobacter*. The statement of Carbone that the cultures of Friebes-Winogradsky, Störmer, Behrens, Beijerinck, and Van Delden were contaminated with *B. felsineus*, the only "true" organism capable of bringing about retting, was not borne out by the results; even when introduced, it soon gives way to *B. amylobacter*. *B. felsineus* is well adapted to pectin fermentation and brings about a somewhat different type of retting than the *B. amylobacter*. The latter contains both retting and non-retting forms. The formation of pectinase by *B. amylobacter* is not as definite and uniform as by *B. felsineus*. The authors discuss further the comparative rôle of the 2 organisms in bringing about retting.—*S. A. W. (Contrib. by Absts. Bact.).*

9355. SÈMICHON, L. Les "solutions nutritives" en vinification. ["Nutritive solutions" in wine making.] *Prog. Agric. et Vitic.* 83: 611-616. 1925.—The use of solutions of sulphurous acid and ammonium phosphate hastens fermentation.—*E. L. Proebsting.*

9356. SÈMICHON, L. Sur la préparation du vin par fermentation continué. Sélection des ferments par l'alcool déjà formé. [Preparation of wine by continuous fermentation. Selection of yeast by the alcohol already formed.] *Prog. Agric. et Vitic.* 79: 404-406. 1923.

9357. SHERMAN, H. C. Chemical investigation of the amylases and related enzymes. *Carnegie Inst. Washington [D. C.] Year Book* 24: 306-308. 1925.

9358. SUZUKI, U., UND T. MORI. Über einen durch Hydrolyse von Adenyl-thiozucker der Hefe entstehenden schwefelhaltigen Zucker. [A sulphur-containing sugar arising by hydrolysis from the adenyl-thio-sugar of yeast.] *Biochem. Zeitschr.* 162: 413-424. 5 fig. 1925.

9359. SYNIEWSKI, V. Untersuchungen über Diastase. II. Wirkt α -Diastase auch β -diastatisch, und umgekehrt β -Diastase auch α -diastatisch? [Does α -diastase have β -diastase activity and vice versa?] *Biochem. Zeitschr.* 162: 228-235. 1925.— α -Diastase has no β -diastase activity, the small β -diastase activity of malt extract being ascribed to the presence of a small amount of β -diastase. β -Diastase has no α -diastase activity, the small α -diastase activity of malt extract heated to 60-61°C. being ascribed to a residue of undestroyed α -diastase.—*H. D. Hooker.*

9360. SYNIEWSKI, V. Untersuchungen über Diastase. IIIa. Über die Geschwindigkeit der unter Vermittlung von α -Diastase verlaufenden, Stärkehydrolyse. [Velocity of starch hydrolysis by α -diastase.] *Biochem. Zeitschr.* 162: 236-244. 1925.—Starch hydrolysis by a pure diastatic enzyme is not a simple monomolecular reaction.—*H. D. Hooker.*

9361. VIRTANEN, ARTHURI I. Ueber die Propionsäure-gärung. [Propionic acid fermentation.] *Soc. Sci. Fenn. Comm. Phys. Math.* 2²⁰: 1-13. 1925.—In an earlier communication (see Bot. Absts. 14, Entry 3865) it was shown that propionic acid fermentation of sugar proceeds through lactic acid. Using desiccated preparations of propionic acid bacteria in the presence of toluol it is found that the sugar unites with phosphoric acid as it does in lactic acid fermentation. The splitting of the ester does not occur in the presence of toluol. The succinic acid fermentation which normally occurs with the propionic acid fermentation is not inhibited by toluol. Acetic acid, possibly as an oxidation product of previously formed acetaldehyde, also occurs as a fermentation product in the presence of toluol. Desiccated preparations of propionic acid bacteria from which the co-enzyme had been removed by washing, produce no combination of sugar and phosphate. Upon the addition of an extract of an unwashed preparation the destruction of the sugar begins. The coenzyme of the lactic acid bacteria can substitute for that of the propionic acid bacteria. Succinic acid fermentation occurs in the absence of the coenzyme.—*P. Collander. (translated).*

9362. VIRTANEN, A. I., UND H. KARSTRÖM. Quantitative Enzymbestimmungen an Mikroorganismen. I. Der Katalasegehalt der Bakterien. [Quantitative estimation of enzymes in microorganisms. The catalase content of bacteria.] Biochem. Zeitschr. 161: 9-46. 1925.—The catalase activity of a number of bacteria was measured by the permanganate method. Peroxide cleavage followed the course of a monomolecular reaction. Catalase activity was found to equal a reaction constant per cell number. *B. prodigiosus* and *B. lactis amari* showed higher catalase activity under anaerobic conditions.—H. D. Hooker.

9363. VOSS, HERMAN. Die Lokalisation oxydativer Fermente in den Ovarialeiern des Frosches. [Localization of oxidative ferments in the ovarian eggs of frogs.] Arch. Mikroskop. Anat. 100: 560-571. 3 fig. 1924.—The oxidase reaction with dimethylparaphenyldiamin (Grübler & Co.) was confined to the yolk plates and the nucleus never showed any oxidase reaction, a bibliography is provided.—H. C. Sands.

9364. WARBURG, O. Über die Wirkung der Blausäure auf die alkoholische Gärung. [Effect of hydrogen cyanide on alcoholic fermentation.] Biochem. Zeitschr. 165: 196-202. 4 fig. 1925.—HCN retarded fermentation by yeast sap and by living yeast in concentrations too low to have a narcotic effect.—H. D. Hooker.

METABOLISM (AERATION, RESPIRATION)

9365. ACKLIN, O. Zur Biochemie des *Bacterium pyocyaneum*. Ein Beitrag zur Frage seines Stoffwechsels und dessen Beziehungen zur intramolekularen Atmung. [Biochemistry of *Bact. pyocyaneum*; its metabolism with relation to intramolecular respiration.] Biochem. Zeitschr. 164: 312-370. 11 fig. 1925.—When *Bact. pyocyaneum* was grown in a nitrate-lactic acid medium, pyruvic acid appeared as an intermediary dissimilation product. Alanine was produced from pyruvic acid. Acetic acid and alcohol were formed from acetaldehyde by Cannizaro's reaction. A quantitative study of metabolism showed that in a nitrate-lactic acid system, 23.6% of the nitrate was consumed in the production of bacterial protein. In an ammonium chloride-lactic acid system, 11.7% of the nitrogen was assimilated. The rapidity with which maximum nitro reduction was attained in various systems was measured. Toxic substances were formed and virulence was maintained in cultures free from protein nitrogen.—H. D. Hooker.

9366. BERGMAN, H. F. The respiratory activity of various parts of the cranberry plant in relation to flooding injury. Amer. Jour. Botany 12: 641-659. 8 fig. 1925.—The regions of high respiratory activity are buds, flowers, young shoots and young fruits. Buds respire faster than flowers and young shoots at about the same rate as flowers but 2-3 times as fast as old shoots. Young fruits, 1-3 days after the petals fall, respire as fast as buds, but the rate decreases rapidly thereafter. Flooding injury occurs when more O_2 is required than can be supplied. Low temperature reduces injury by reducing the O_2 requirement of the cranberry plants, reducing the rate of oxidation of organic matter in the water and increasing the capacity of water to absorb O_2 . Injury is less on clear days because of the increased amount of O_2 in the water due to photosynthetic activity. Conditions which reduce the O_2 content of the water and increase the O_2 requirement of insect larvae are most suitable for insect control, but these conditions are most likely to be harmful to submerged plants. Flooding injury occurs more often on bogs flooded with water from swamp reservoirs than on those for which the water is taken from ponds.—E. W. Sinnott.

9367. BODNAR, J., UND P. HOFFNER. Beiträge zur biochemischen Kenntnis der postmortalen Pflanzenatmung. [Biochemistry of postmortem respiration in plants.] Biochem. Zeitschr. 165: 145-167. 1925.—The ratio of alcohol to CO_2 was 0.986-1.014. in the anaerobic respiration of seed meal of peas and of *Lupinus luteus*. Potassium phosphate increased both CO_2 and alcohol production. More CO_2 and alcohol were produced during respiration in air than in H. The meal was inactivated by dialysis and reactivated by addition of a boiled aqueous extract, which also stimulated the respiration of untreated meal. The co-enzyme of yeast did not reactivate dialysed meal. Acetaldehyde was produced from pyruvic acid and from sodium pyruvate. Acetaldehyde was utilized most rapidly by the pea meal. The stimulating action of yeast extract on postmortem respiration of plants is attributed to its content of material from which CO_2 and acetaldehyde can arise.—H. D. Hooker.

9368. FERNANDES, D. S. A method of simultaneously studying the absorption of O_2 and the discharge of CO_2 in respiration. Proc. Roy. Acad. Sci., Amsterdam 26^{5/6}: 408-419. 1923.
9369. GINSBURG, JOSEPH M. A modified respiration apparatus for plant and soil studies. Soil Sci., 19: 411-414. 1925.
9370. KARLSEN, ASTRID. Comparative studies on respiration. XXVIII. The effect of anesthetics on the production of carbon dioxide by wheat under aerobic and anaerobic conditions. Amer. Jour. Botany 12: 619-624. 4 fig. 1925.—The effects of ether, benzene and alcohol on aerobic and anaerobic respiration are closely similar, indicating that the fundamental processes or master reactions on which they depend are similar.—E. W. Sinnott.
9371. KOSTYTSCHEW, S. Pflanzenatmung. [Plant respiration.] (Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere, Band 7.) 158 p. Julius Springer Berlin, 1924.
9372. MAYER, ANDRE, ET L. PLANTEFOL. Hydration et respiration chez les mousses. Hydratation et nature des phenomenes respiratoires. [Hydration and respiration in mosses. Hydration and the nature of respiratory phenomena.] Ann. Physiol. et Biochimie Biol. 1: 361-393. 1925.—Continuing earlier work with *Hypnum triquetrum* (Ibid. 1: 64-84. 239-280. 1925.) in which it has been shown that cellular oxidations vary with the degree of inhibition and that there is a definite ratio between intensity of respiration and water content, the authors have studied the respiratory ratio in mosses in various stages of desiccation when kept in darkness. The Haldane apparatus, the Barcroft Monometric method, and the Laulanie eudiometer as modified by Plantefol, were employed in determining the rate of gaseous exchange. In material having maximum water content (400 gm. per 100 gm. dry matter) the respiratory quotient approximates unity, in that having 60 gm. water per 100 gm. dry matter it is inferior to unity, while in that with smaller amounts of water it is greater than unity, in some cases having a value of 4-6. The CO_2 evolved is not the result of retention of gas within the plant during desiccation, but is the product of anaerobic respiration, since the respiratory rate is the same in material dried under reduced pressure or in air. The high respiratory rate is maintained for some weeks, then gradually declines to unity.—Joseph S. Caldwell.
9373. MÜLLER, D. Studies on traumatic stimulus and loss of dry matter by respiration in branches from Danish forest-trees. Dansk Bot. Arkiv. 4^o: 1-33. 1924.—The author has investigated the sensitiveness to traumatic stimulus of branches (5-12 years old) of *Fagus silvatica*, *Fraxinus excelsior* and *Picea abies*, measured by the increased emission of CO_2 after the cutting of the branches. Generally the increase of respiration after traumatic stimulus was as great as hitherto known only from storage organs such as potato-tubers and bulbs. Details are given.—In accordance with the hypothesis of Boysen Jensen the great loss of dry matter by respiration may be of importance for the economy of trees.—D. Müller.
9374. OERSKOV, J. L. Les bacilles appartenant aux groupes typhique, paratyphique, paradysentérique et coli, deviennent, après chauffage, hypersensibles à l'action de l'oxygène atmosphérique. [Bacilli belonging to the typhoid paratyphoid, paradysentery and colon group become, after heating, hypersensitive to the action of atmospheric oxygen.] Compt. Rend. Soc. Biol. 92: 402-404. 1925.—After subjecting organisms of this group to the action of heat for varying periods of time, they fail to grow in the presence of free O_2 on the surface of the agar slant, or near the surface of shake agar cultures. However, when shake agar cultures are inoculated with heated cultures, growth will take place in the depths of the tube when agar slant streaks are negative, and a clear zone appears at the top of the agar shake cultures.—G. F. R. (Contrib. by Absts. Bact.).
9375. OTA, JUNJI. Continuous respiration studies of dormant seeds of *Xanthium*. Bot. Gaz. 80: 288-299. Fig. 1-4. 1925.—There is a notable increase in the respiration rate of dry seed during the 1st day of subjection to favorable germinative conditions in the respirometer. After this initial increase, the respiration rate falls rapidly, with some slight fluctuations during the 2nd and 3rd days, to a low level, after which there is a very slow decrease in rate as long as the experiment is continued. If the seed are soaked in cold water previous to placing them in the germinator, the respiration rate reaches its maximum earlier than unsoaked seed; otherwise the curve of respiratory activity is the same as in unsoaked seed. If the seed are taken

from the respirometer, dried, and again placed in the respirometer, they always show the increased respiration immediately after being placed under germinative conditions. The weight changes occurring in seed during long periods of dormant respiration have also been noted and compared with the respiration data. The experiments did not run long enough to give the natural rate of carbon loss from respiration in nature. Respiratory activity and catalase activity in these seed run parallel throughout the period of dormancy.—*Author*.

9376. SPOEHR, H. A., AND JAMES H. C. SMITH. I. The oxidation of glucose with air. Carnegie Inst. Washington [D. C.] Year Book 24: 154-155. 1925.

9377. SZENT-GYÖRGYI, A. V. Zellatmung. IV. Über den Oxydationsmechanismus der Kartoffeln. [Mechanism of oxidation in potatoes.] Biochem. Zeitschr. 162: 399-412. 1925. —Pyrocatechol is oxidized by potato oxidase to o-diketoquinone which oxidizes the guaiac reagent directly. Peroxides or peroxidases are not involved in the reaction. The quinone also oxidizes tyrin to a pigment. Tyrin is the leuco-form of a respiration pigment found also in animals. It is soluble in water and methyl alcohol and slightly soluble in ethyl alcohol.—*H. D. Hooker*.

ORGANISM AS A WHOLE

9378. ARLOING, FERNAND, L. LANGERON, ET SEMPÉ. Recherches comparatives sur l'action de certain agents physiques sur le Bactériophage. Une diastase et le complément. [Comparative investigations on the action of certain physical agents on the bacteriophage. Enzyme and Complement.] Compt. Rend. Soc. Biol. 92: 260-261. 1925.

9379. CADORET, A. La vie des champignons en milieux acides et basiques. [Fungi in acid and basic media.] Prog. Agric. et Vitic. 80: 205-207. 1923.

9380. [ФИХТЕНГОЛ'ТС, S. S.] Фихтенгольц, С. С. К вопросу о физиологической роли нервации листьев. [The physiologic rôle of nervation in leaves.] (French résumé.) Известия Петроградского Научного Института им. П. Ф. Лесгафта [Bull. Inst. Lesshaft] 6: (1-10). 4 fig. 1923.—(See also Bot. Absts. 13, Entry 3817.)

9381. HARRIS, J. A. Leaf-tissue production and water content in a mutant race of *Phaseolus vulgaris*. Bot. Gaz. 72: 151-161. 1921.

9382. HUNTER, C., AND E. M. RICH. The effect of artificial aeration of the soil on *Impatiens balsamina* L. New Phytol. 24: 257-271. 7 fig. 1925.—Experiments on *Impatiens balsamina* show that artificial aeration of the soil results immediately in more regular and more rapid stem and root elongation and in an increase in the rate of transpiration and respiration. It is suggested that these results are due to the removal of CO₂ from the vicinity of the root hairs.—*I. F. Lewis*.

9383. INAMDAR, R. S., AND AKSHAIBAR LAL SHRIVASTAVA. The relation between the specific conductivity and the structure of the wood elements in the tropical plants. Jour. Indian Bot. Soc. 4: 304-306. 1925.—Measurements of average specific conductivity and average diameter of vessels are given for 11 species of tropical plants, mostly woody. "The diameter of the vessels varies in the same direction as the specific conductivity." Variations in specific conductivity are due not only to variations in diameter of the vessels, but also to "the length of the vessels and the proportion of the conducting elements to the total area of the wood," and especially to the "resistance offered by the wood," which agrees with the results of similar studies of temperate-region plants.—*Winfield Dudgeon*.

9384. JOHNSTONE, GEORGE R. Physiological study of two varieties of *Ipomoea batatas*. Bot. Gaz. 80: 145-167. 4 fig. 1925.—Freshly dug sweet potatoes, varieties Porto Rico and Triumph, increase in rate of respiration apparently from date of harvest until a maximum is reached, and then the rate gradually falls to a nearly constant level. Cured sweet potatoes do not reach so high a maximum rate of respiration under the same conditions of storage and experimental procedure. Curing decreases the rate of respiration. Increase of respiration as a result of injury when the cortical layer is broken is largely due to facilitating the exchange of gases, rather than to direct wound stimulation. Curing under carefully controlled conditions does not reduce the moisture content greatly. Porto Rico variety has a larger percentage of CO₂ in the intercellular spaces than Triumph, under the same conditions of storage and treatment. Regeneration frequently occurs during the curing process, which indicates that

dormancy depends on the existence of lower temperature, approximately 25°C. and lower. The H-ion concentrations of the expressed juices are about the same in each variety, being slightly acid. Moisture and catalase activity are higher in Porto Rico than in Triumph. Both laccase and peroxidase are present in the Porto Rico variety. These enzymes seem to be important in connection with discoloration of the tissues on exposure to the air. Laccase is thermostable at 60-70°C., while the organic peroxide of the peroxidase-oxidase system is thermolabile at 60-65°C. The oxidase system seems to be injured by changes initiated by chilling. Amylase activity varies considerably with storage conditions and treatment. Optimum activity occurs at pH 7-9, with a marked falling off at pH 5. Amylolytic activity of Porto Rico is greater than that of Triumph. Tests for tyrosinase were negative in each variety. A physiological distinction of the 2 varieties is evident. Porto Rico has greater respiratory and enzymatic activity, and a higher moisture content.—*Author*.

9385. KROHN, VAINO. The principle of the absolute minimum in comparative physiology. *Ann. Acad. Sci. Fenn. Sec. A.* 24¹⁶: 1-112. 1925.—As the principle of the absolute minimum it is considered that in seeking the true relative values of the degrees of influence exercised by physiological factors of like type, comparisons should be based on their optimum degrees of influence. The principle is applied to the determination of the relative value of different sugars in the nutrition of *Bacillus thermophilus B* and their influence on the motility of the same organism. The author concludes that, since the results obtained in working out comparisons between the degrees of influence excited by variations of a physiological factor are dependent on chance, if all other vital conditions are kept constant, correct results are certain only if the principle of the absolute optimum is adhered to. The relative values of the variations of the same physiological factor can vary fundamentally, depending on which manifestation of life in the organism under investigation is chosen as the basis of comparison.—*R. Collander*.

9386. KUFFERATH, H. Interprétation stereogrammatique de la courbe de sporulation des levures décrité par Hansen. Son application aux phénomènes physiologiques et biologiques. [Stereogrammatic interpretation of the sporulation curve in yeasts described by Hansen. Its application to physiological and biological phenomena.] *Bull. Cl. Sci. Acad. Roy. Belgique V 7*: 332-356. 4 fig. 1921.

9388. LEWY, F. Ueber die spezifische Arzneifastigkeit der Pneumokokken. I. Zur Methodik der Festigung gegen Optochin. [The specific drug-fastness of the pneumococci. I. The method of producing fastness to optochin.] *Zeitschr. Immunitätsf. u. Exper. Therap.*, I. Teil. Originale 43: 196-209. 1925.—By repeated treatment of pneumococci with optochin, starting with very dilute solutions of this substance and gradually increasing the concentration during a long period, these organisms can be changed so that they have a high degree of resistance to optochin. At the same time, the virulence of the strains thus treated is greatly reduced. Instead of exhibiting a specific drug fastness, the strains of pneumococci changed in this manner were identical with the non-hemolytic streptococcus, described as modification B in the previous paper. In other cases, it was possible to produce strains of pneumococci which were resistant to 80 and 120 times the concentration of optochin which killed normal pneumococci. These strains retained a high virulence for mice, and were, therefore, considered to be pneumococci with specific drug-fastness.—*S. B-J. (Contrib. by Absts. Bact.)*.

9389. LEWY, F. Ueber die spezifische Arzneifastigkeit der Pneumokokken; II. Mitteilung. Die Beziehungen zwischen chemischer Konstitution und Arzneifastigkeit. [The specific drug-fastness of pneumococci. The relationship between chemical constitution and drug-fastness.] *Zeitschr. Immunitätsf. u. Exper. Therap.*, I Teil. Originale 43: 243-253. 1925.—The strains of pneumococci which had been made resistant to optochin were used to determine the relationship between drug-fastness and the chemical constitution of derivatives of quinine. A specificity analysis with an optochin-fast strain of pneumococcus resulted as follows: Quinine and hydroquinine also had specific actions on this optochin-fast strain. Extensive variations of the side-chain or nucleus of optochin removed the specific effect of optochin on pneumococci. Experiments with the quinine alkaloids and a compound very different from them, the 9-amino-akridin-derivative, showed that pneumococci have several sensitive groups or chemoreceptors. A combination of different drugs is suggested for the chemotherapy of pneumonia and infections with the pneumococcus.—*S. B-J. (Contrib. by Absts. Bact.)*.

9390. MARCHI, MARIA DE. *Appunti di Fisiologia Vegetale sopra la Saxifraga Cotyledon L.* [Physiology of *Saxifraga cotyledon*.] Atti Ist. Bot. Univ. Pavia. Ser. III, 2: 347-360. 1925.—*Saxifraga cotyledon* is studied with regard to (1) reserve materials (which are found to be fats and their exhaustion after inflorescence; (2) distribution of water and ash in the plant during different months of the year; (3) distribution of water and rate of transpiration in different leaves of the rosette; (4) the alpine habitat of the plant and the effect of a change, comparing plants which flowered in the mountains with those that flowered in the valley as to time of flowering, number of flowers, and length of inflorescence.—*P. D. Caldis*.

9391. MEVIUS, W. Die direkt Beeinflussung der Pflanzenzelle durch die Wasserstoff-Ionenkonzentration des Nährsubstrates. [The direct influence of the hydrogen ion concentration of the nutrient substratum upon the plant cell.] Zeitschr. Pflanzenernähr. und Düngung. 6: 89-98. 1925.—The author emphasizes the value of a consideration of the H-ion concentration, both by the plant physiologist and by the agricultural chemist.—*F. M. Schertz*.

9392. MIYAGAWA, Y. On the biological function of the constituents of the dead cells. A new theory on the process of the physiological functions of living organism and of man. Sci. Rept. Gov. Inst. Infectious Diseases. Tokyo Imp. Univ. 2: 375-395. 1923.

9393. MOLISCH, H. Über Kalkbakterien und andere kalkfällende Pilze. [Calcium-bacteria and other calcium-precipitating fungi.] Centralbl. Bakt. [etc.] II Abt. 65: 130-139. 1925.—The author refers to calcium-bacteria as those bacteria the growth of which is characterized by the formation of CaCO_3 in a crystalline form in close proximity to the cell (extracellular). These bacteria are readily demonstrated by placing a few drops of natural sea water upon a sterile medium consisting of 1000 gm. sea water, 10 gm. peptone, 5 gm. glycerin, and 18 gm. of agar made faintly alkaline. The author isolated 2 organisms: (1) *Pseudomonas calcipraecipitans*; and (2) *Pseudomonas calciphila*. An actinomyces and a rose yeast were also found capable of inducing the formation of CaCO_3 .—*S. A. W. (Contrib. by Absts. Bact.)*

9394. PRESCOTT, J. A. A study of nitrogen and root space as factors limiting the yield of maize in Egypt. Sultanic Agric. Soc. Bull. 4. 1-14. 1920.—The response of maize to NaNO_3 followed very closely the mathematical expression of Mitscherlich relating to the law of limiting factors. This is $\frac{dy}{dx} = c(A-y)$ or $\text{Log}(A-y) = K-cx$, where y is the yield when x is the amount

of the limiting factor, A is the maximum yield obtained if the factor is in excess, and c and K are constants. At the highest dressing of 400 K per acre, some depressing factor was introduced. The same formula seems to hold if the root space is taken as the variable. It is suggested that this method be used to compute the spacing required for Egyptian crops.—*W. C. McQuiston*.

9395. RIVIÈRE, GUSTAVE, ET GEORGES PICHARD. Contribution à la physiologie de la greffe. [Contribution to the physiology of the graft.] Jour. Soc. Nat. Hort. France 25: 101-103. 1924.—Analyses are given of fruits of apples (*Calville blanc*) grown on trees grafted directly on P. paradise stock or grafted on Api rose, previously grafted on paradise stock. The fruits from the latter were higher in sucrose and total sugar; the yield of fruits was greater and the trees had made greater growth in length and in diameter than when grafted directly on paradise stock.—*H. C. Thompson*.

9396. RUBENTSCHIK, L. Zur Frage der Beziehungen der Urobakterien zu organischen Verbindungen. [Relation of urea bacteria to organic compounds.] Centralbl. Bakt. [etc.], II Abt. 65: 1-15. 1925.—Various urea bacteria isolated from the Chadjibeyliman can grow and ferment urea, with various organic nitrogen compounds as sources of energy. Starch and dextrin could be utilized as sources of energy by only 1 species (*Urobacterium amylovorum*). The urea could be used as a source of nitrogen but not as a source of energy. Each species was found to prefer a certain energy source.—*S. A. W. (Contrib. by Absts. Bact.)*

9397. SAVASTANO, GIULIO. Alcune ricerche bio-colturali sulle cause della longevità dell'olivo. [Biocultural researches on the cause of longevity in the olive.] Ann. R. Staz. Sper. Agrumic. e Fruttic. Acireale 7: 71-88. 6 pl. 1923.—The author studies the factors that contribute to the longevity of the olive. He gives a short list of trees of known longevity ranging from 7 to 10 centuries of age. The longevity of the olive is attributed to a relation between vital decadence and sucker activity of the epigeous and hypogeous parts of the tree, according

to which, with prevalence of the former, the center of sucker activity is translocated gradually from the branches to the roots. Under such circumstances either as a reaction to rots or as an inherent specific character, neoplastic tissues, rapid and vigorous, are produced in the form of swellings (mammelloni) and ridges (costoloni) and are capable of reconstructing the plant by producing vigorous suckers.—*P. D. Caldis.*

9398. SCARPELLINI, A. *Le colture rampicanti*. ["Climbing" cultures.] *Riv. Biol.* 7: 9-45. 1925.—The author experimented with the capacity of *Bacillus subtilis* to "climb" on grass, the soil being watered with aqueous suspensions of the organism. He concludes that movement of bacteria in culture and in nature is analogous although more active and evident in the latter case. Species of *Bacillus* climb more than coccus and non-motile bacteria. The climbing of the bacteria is a function of the water content and concentration of the medium.—*R. Ciferri (transl.)*.

9399. TEICHMANN, WILHELMINE. *Über den Formenreichtum der Monilia variabilis* *und seine Ursachen*. [The manifold forms of *M. variabilis* and their causes.] *Zeitschr. Tech. Biol.* 9: 1-S3. 1921.—The writer ascribes the multiplicity of forms of *Monilia variabilis* to be due in part to the normal variation of the fungus, but mainly to modifications brought about by environic factors; mutations of morphological characters, especially hereditable constant races, have not been observed. The several variants differed functionally as well as structurally when cultured under certain environmental and nutritional conditions. The author concludes that each cell of the fungus harbors as "Anlagen" all the hereditary characters of the species in any one unknown form but for the development of these Anlagen in the cell special relationships which depend on external "developmental conditions," must occur; it is, therefore, apparent that the production of forms is not entirely determined from "within," but is the result of internal and external factors, and hence scientific taxonomy must be adjusted to a "physiologic form basis."—*M. N. Levine.*

9400. VEJNAROVÁ, E. *O vlivu media na tvar a funkci buněk in vitro*. [Influence of medium on form and function of cells in vitro.] *Sborník Přírodovědecký [Praha]* 1: 50-60. 1925.—This is a critical summary of 55 papers dealing with the problem indicated in the title.—*Silvestr Prát.*

9401. VISHWANATH, B., AND S. KASHINATHA AYYAR. *Studies in the chemistry of sugarcane II. Some factors that determine the ripeness of sugarcane*. *Mem. Dept. Agric. India. Chem. Ser.* 7^o: 1924.

9402. WACHTER, W. *Pflanzliche Hormone*. [Plant Hormones.] *Schweiz. Apoth.-Zeitg.* 52: 729-733. 1924.—Whether plant hormones are or are not identical with those of animals is immaterial. The facts which suggest the occurrence of hormones in plants are presented.—*Charles C. Plitt.*

9403. WOLFF, J. *Observations sur les divers modes de culture de Orchidées*. [Various ways of cultivating Orchidaceae.] *Rev. Path. Vég. et Entomol. Agric.* 12: 187-191. 1925.—Seed of Orchidaceae are unable to germinate if, previous to being aseptically plated to nutrient agar, they are exposed for 2 months or longer to air, in darkness. Seedlings grown in the absence of the symbiotic fungus become depauperate when three months old. A mycelium which proved pathogenic to seed of *Cattleya*, would not attack seedlings; that is, seedlings were successfully grown on nutrient agar in the presence of the fungus that attacks and kills the seed.—*J. Dufrenoy.*

9404. YOCUM, L. EDWIN. *The translocation of the food material of the wheat seedling*. *Jour. Agric. Res.* 31: 727-744. 4 fig. 1925.—The small amount of sugars normally found in the wheat kernel increases very rapidly during the first 6 days of germination, when the maximum amount is found. About this time the amount decreases, probably because the amount of starch has been reduced so much, now to about 25% of the original amount, and also at this time the seedling begins to manufacture a small amount of carbohydrates, but not until the 12th day does the seedling manufacture carbohydrates rapidly enough to cause an increase in the total dry weight of the plant. The nitrogen is lost quite rapidly from the seedling during the first 3 days, but after that it begins to add nitrogen and after 12 days the increase is comparatively rapid. The ash content is increased at the 3-day stage and continues to increase very rapidly throughout the 25-day period covered in this test. The percentage of ash at the

end of 15 days is about 12%, which is probably the maximum amount of ash obtained by the wheat plant during its development. The concentration of the cell sap decreases from the 2nd to the 12th day, after which increase takes place following closely the changes in the amount of water, sugar, and ash in the plant.—*Author*.

GROWTH, DEVELOPMENT, REPRODUCTION

9405. BAITSELL, GEORGE A., AND MARION B. SHERWOOD. A new culture medium for tissues grown in vitro. *Proc. Soc. Exp. Biol. and Medicine* 23²: 96-97. 1925.

9406. BAULE, BERNHARD. Wirkungsgesetz und Wachstumsgesetz. [Kinetic laws and growth laws.] *Landw. Jahrb.* [Berlin] 59: 341-354. 1924.

9407. BROOKS, MATILDA MOLDENHAUER. A note on the rate of growth of *Valonia macrophysa*. *Amer. Jour. Botany* 12: 617-618. 1 fig. 1925.—The growth rate of cells of this species grown for 68 days at about 22°C. is recorded. Growth in width was about twice that in length. The shape of the plant is influenced by crowding.—*E. W. Sinnott*.

9408. EULER, H. v. Über das Wachstum von Mikroorganismen auf bestrahlten lipoidhaltigen Nährböden. I. [Growth of micro-organisms on irradiated media containing lipoids.] *Biochem. Zeitschr.* 165: 23-28. 1925.—A nutrient substrate containing arachis oil was exposed to a mercury quartz lamp. Growth of *Penicillium glaucum* was twice as much on the medium exposed 2 minutes as on the unexposed substrate. Longer exposures retarded growth. *Rhizopus chinensis* grew best on the medium exposed 20 minutes; 45- and 90-minute exposures retarded growth.—*H. D. Hooker*.

9409. FAURE-FREMIET, E. La cinétique du développement. Multiplication cellulaire et croissance. [Kinetics of development. Cellular multiplication and growth.] viii + 335 p. 64 fig. *Les Press Univ. de France*: Paris, 1925.

9410. FINARDI, LUISA. Caratteri di Senilità nelle Piante. [Characteristics of senility in plants.] *Atti Ist. Bot. Univ. Pavia. Ser. III*, 2: 305-333. 2 pl. 1925.—The author confirms the findings of Benedict (New York Agric. Exp. Sta. [Cornell] Mem. 7. 1915) and Tellefsen (Amer. Jour. Bot. 9: 1922) regarding the relation existing between the age of a plant and the area of the nerve-islets of the leaves, which diminishes with the increase in age of the plant. The area of the nerve-islets is constant in the different parts of the same leaf and leaves of the same plant. Such area is independent of the dimensions of the leaves in the same plant. Plants of different species but of same age have nerve-islets of diverse areas and, finally, the differences in the dimensions of the areas between young and old plants vary according to the species considered. *Juglans regia*, *Fagus silvatica*, *Prunus mahaleb*, *Eriobotrya japonica*, *Raphiolepis ovata*, *Gleditschia triacanthos*, *Tilia parviflora*, *Sterculia platanifolia*, *Acer pseudo-platanus*, *Acer fraxinifolia*, and *Aesculus Hippocastanum* were the plants studied, and the method used was that of deVries, consisting in boiling the leaf in a 20% solution of potash, neutralizing with acetic acid, washing well in running water, and immersing in a 10% solution of iodine-green. The stain is washed off from the leaf, leaving only the veins colored.—*P. D. Caldis*.

9411. GAIN, EDMOND. Effets de l'anesthésie sur la croissance d'*Allium*: observation du choc anesthésique. [Effects of anesthesia on the growth of *Allium*: the anesthetic shock.] *Compt. Rend. Soc. Biol.* 93: 763-764. 1925.—The growth of the *Allium* leaf was measured with a horizontal microscope before and after treatment with chloroform. During the first 15 minutes after the anesthetic was introduced into the bell-jar growth increased 168% but slowed down to zero during the next $\frac{1}{2}$ hour. Fresh air was then allowed to reach the plant and the chloroform removed. Growth then began again and at the end of 45 minutes the plant was growing almost as rapidly as when first stimulated by the anesthetic, but $1\frac{1}{2}$ hours later the growth had diminished to the pre-anesthesia rate.—*Oran Raber*.

9412. GLEISBERG, W. Die Zellstimulation besonders in ihrer landwirtschaftlichen und gärtnerischen Bedeutung. [The importance of cell stimulation in agriculture and gardening.] *Naturwissenschaften* 12: 501-503. 1924.—A review is given of the recent studies of Popoff and the author on the use of $MgCl_2$ and other deoxidizing substances for producing a stimulation of division of *Paramaecium*, of wound healing with *Hydra* and man, and of forcing plants out of the rest period and the resulting stimulation to plant growth obtained from soaking

various kinds of seed in solutions of the different salts. The theoretical basis worked out by Popoff to account for the stimulation (increased respiration) is applied with success to a number of cases in the literature of stimulative effects obtained in plant growth by the use of various chemical substances.—*Orton L. Clark.*

9413. GLEISBERG, W. Reifebeginn, Ertrag und Samenstimulation bei Tomaten. [Initiation of ripening, bearing and seed stimulation in tomato.] *Zell Stimulationen Forsch* 1: 87-8. 1924.

9414. HERCIK, FERD. On the growing reactions, produced by the change of hydrogen-ion concentration in germinating roots of *Pharbitis hispida*, Choisy. *Spisy Vydavane Prirodovedeckou Fakult. Masarykovy Univ.* 49: 1-21. 1925.—Following the line of Blaauw's experiments with the immediate effect of the change of light concentration on growth, the author studied the effect of the sudden change of H-ion concentration on the rate of growth of roots growing in a buffer solution. The conditions were controlled very carefully so that a constant rate of growth was attained and then the solution was changed for one of a different H-ion concentration. The buffer solutions were composed of the various sodium salts of phosphoric acid. The rate of growth was measured at short intervals following the change and it was found that the results compared with those of Blaauw for light, that is, the change resulted in a sudden large increase or decrease in the rate, following which the rate gradually assumed a normal value. If the change was an increase in the rate it was called positive; if a decrease in the rate, negative. If the buffer solution was changed from acid to alkaline a negative reaction was obtained, and the reverse if changed from alkaline to acid. When changed from acid to less acid the reaction was positive; from alkaline to less alkaline, negative. If changed from acid to neutral (pH 7.0) the reaction was negative; alkaline to neutral, positive. From acid to more acid it was negative and from alkaline to more alkaline, positive; but from neutral to alkaline it was negative; from neutral to acid, positive. All changes were made in the range pH 3.8-10.0.—*A. F. Camp.*

9415. KLUGH, A. B. The effect of light of different wave lengths on the rate of reproduction of *Volvox aureus* and *Closterium acerosium*. *New Phytol.* 24: 186-190. 1925.

9416. KONDO, S. Der Verwendungsstoffwechsel säurefester Bakterien. VI. Über den Einfluss der Wasserstoffionenkonzentration auf das Wachstum der säurefesten Bakterien in einfachen künstlichen Nährböden. [Influence of H-ion concentration on growth of acid fast bacteria in simpler artificial media.] *Biochem. Zeitschr.* 162: 171-180. 1925.—Saprophytic acid-fast bacteria and the tubercle bacilli of cold and warm blooded animals showed no characteristic behavior in regard to the optimum H-ion concentration for growth in synthetic media. Concentrations near neutrality were most favorable. The better the nutritive conditions, the better unfavorable H-ion concentrations were withstood.—*H. D. Hooker.*

9417. KOŘINEK, J. Ueber die Symmetrie der Keimpflanzen. [The symmetry of seedlings.] Summary in: *Archiv für Entwicklungsmech.* 52: 678-679. 1922.—(Original in *Věda Přírodní [Praha]* III. 1922.)—The mature plant is apparently radially symmetrical. The sprouting plant with hypogean cotyledons appears to have a bilateral symmetry, so that right and left sides can be distinguished. The one cotyledon may however be older than the other and the seedling really be a symmetrical body. The author decapitated *Pisum sativum* seedlings and found that the 2 axillary buds of the cotyledons do not develop equally and that the greater development occurs in either right or left sides. Reduction in the size of a cotyledon results in a better growth of its axillary bud. Exposing one cotyledon to light injures in the proportion of 60 to 40%. Other influences affect the ratio. The author concludes that the sprouting plant is a symmetrical body. The original asymmetry is slight. Neither the right nor the left type is predominant in *Pisum sativum*. It is not known whether the original asymmetry is accidental or whether there is a combination of a right type and a left type heredity in the race.—*John H. Schaffner.*

9418. KOSAKA, HIROSI. Über den Einfluss der Frucht auf die Samenreife bei einigen Kulturpflanzen. [Influence of the fruit on seed ripening in a few cultivated plants.] *Jour. Dept. Agric. Kyushu Imp. Univ.* 1: 197-216. 1925.—The investigation involved several varieties of *Capsicum annum*, *Cucumis sativus*, and *Solanum melongena*. Detached fruits and whole plants with attached fruits were stored on laboratory tables and under glass for various periods, and the relation of color, dry weight and germinability of seed to color and

ripeness of fruits was studied. In all cases there was regular development of color in storage, and its rate decreased in the order: fruit on plant in light—fruit on plant in room—detached fruit in light—detached fruit in room—field control. Along with the color change in fruit and seed there was increase in both dry weight and percentage germination of seed. Apparently this gain in weight is at the expense of the fruit rather than of the parent plant. *Capsicum* showed greater increase in these 2 factors in fruits stored in light than in those stored in the room; *Cucumis* showed the reverse of this and *Solanum* was neutral in this respect. Seed removed from unripe fruits increased only slightly in germinability during storage. The question is raised whether the normal increase in seed left within the fruit is the same as "after-ripening."—*H. S. Wolfe.*

9419. MACDOUGAL, D. T. Accretion and distention in plant cells. Carnegie Inst. Washington [D. C.] Year Book 24: 137–138. 1925.

9420. MACDOUGAL, D. T. Dendrographic studies of growth in trees. Carnegie Inst. Washington [D. C.] Year Book 24: 138. 1925.

9421. NÈMEC, B. Methoden zum Studium der Regeneration der Pflanzen. [Methods for studying regeneration in plants.] Handbuch biol. Arbeitsmeth. (Abderhalden). P. 801–838. Urban u. Schwarzenberg: Berlin-Wien, 1924.—These methods are described in 6 chapters as follows: (1) Regeneration of the cell, (2) isolation of cells from tissues, (3) healing and regeneration of tissues, (4) restitution, (5) reproduction, and (6) transplantation. A list of literature is appended.—*From Preslia (transl.).*

9422. NIETHAMMER, A. Über das Gesetz von Minimum bei Pilzkulturen. [The law of minimum in relation to fungous cultures.] Biochem. Zeitschr. 165: 168–195. 3 fig. 1925.—When the concentration of sucrose was increased, the growth of *Aspergillus niger* increased in proportion up to a 20% solution. *Amylomyces rouxii* and *Mycoderma cerevisiae* were unable to utilize sucrose as fully at such high concentrations. Growth was relatively slower at first in the higher sugar concentrations. The weight of fungus increased with increases in the N, K and P supply and, within limits, in proportion to the amount supplied. The maximum reached with an inorganic N supply ($(\text{NH}_4)_2\text{SO}_4$) was further increased by addition of organic N (peptone). The addition of a small quantity of ferric sulphate induced a better utilization of the nutrient solution. The quantitative data conform to Mitscherlich's logarithmic curve.—*H. D. Hooker.*

9423. PEARSALL, W. H. Hydrogen ion concentration and growth. Sci. Prog. 20: 58–67. 1925.—This is a review of research and hypotheses toward the explanation of conditions favoring cell growth. Meristematic cells have relatively less water than do ordinary tissue cells. It might appear, then, that the extraction of water from a mixture of 2 relatively simple substances shifts the equilibrium toward the synthesis of a more complex substance, that is, toward growth. Pearsall and Priestly suggest that an essential condition for the resumption of growth in normal non-growing tissues is the development of a H-ion concentration such that the protoplasm and its principal proteins are reduced to an isoelectric condition. A number of observations bear this out. Weber accepts its main points, but prefers to consider cell division associated with alterations in the colloidal state of protoplasm, which state is affected by alterations in H-ion concentration. Artificial parthenogenesis induced by exposure of eggs to CO_2 , butyric acid, etc., may be a matter of shifting H-ion concentration to the isoelectric point.—*L. A. Kenoyer.*

9424. PENROSE, LIONEL S. A note on the relation of rate of growth to structure in plants. New Phytol. 24: 294–299. 4 fig. 1925.—From observations on the average distribution of the veins in the middle leaflet of *Ptelea trifoliata* and on the rate of growth of the Hart's Tongue fern, it is found that the limiting size which similar parts of a plant structure attain is determined by the rate of growth of the growing area when they are originated, and that this rate increases and decreases in the manner of an autocatalytic chemical reaction.—*I. F. Lewis.*

9425. PFEIFFER, H. Grundlinien zur Entwicklungsmechanik der Pflanzengewebe. [The principles of the developmental mechanics of tissues.] Gebrüder Borntraeger: Berlin, 1925.

9426. RIPPPEL, A. Wachstumsgesetze bei höheren und niederen Pflanzen. [Laws of growth in higher and in lower plants.] Naturw. u. Landw. 3: 1–90. 1925.

9427. SCHUEPP, OTTO. Wachstumsmessungen an Knospen und Vegetationspunkten. [Growth measurements on buds and growing points.] Verh. Naturw. Ges. Basel 34: 41-68. 1922 [1923.]

9428. SIERP, H. Untersuchungen über die Grosse Wachstumsperiode. [The grand period of growth.] Bot. Centralbl. 40: 433-457. 1920.

9429. THIELMANN, M. Essais de culture des stomates. [Experiments on the culture of stomata.] Compt. Rend. Soc. Biol. 92: 888-890. 3 fig. 1925.—Epidermal cells were grown in sugar solutions. If much mesophyll was present the other epidermal cells grew at the expense of the stomatal cells, but if only a small amount of mesophyll was present a marked growth of the stomatal cells was observed although there was no cell division. No explanation is given for this antagonism between the epidermal cells and the stomatal cells.—The influence of the nucleus on the growth of the cell wall was very marked, as previously noted by Haberlandt.—*Oran Raber*.

9430. THIELMANN, M. Über Kulturversuche mit Spaltöffnungszellen. [Culture experiments with stomatal cells.] Arch. Exp. Zellforsch 1: 66-108. 1925.

9431. VEJNAROVA, EMILIE. Beschleunigung der Zellteilung mittels der Verminderung der Oberflächenspannung der Mediums. [Acceleration of cell division by means of a diminution in the surface tension of the medium.] Arch. Mikroskop. Anat. 101: 553-557. 1924.—The tails of *Triton talnatus* were cut off and the animals held in place so that regeneration from the wounded surface would occur in various concentrations of sodium taurocholate, sodium glycocholate and quinine sulfate. Controls in pure water for each series were provided. The regenerated ends were cut off, fixed, stained and mounted for comparison. It was determined macroscopically that animals held in solutions active in respect to surface tension showed accelerated growth, frequent shedding of the skin, and, on wounding, excessive bleeding. Microscopically the form of such regenerations differ from the normal by thickening of the epithelial layers on the edges, while the middle is free or nearly free from epithelium, so that the connective tissue may become infiltrated without hindrance. The epithelium constructs outgrowths and peg-like shapes. Mitoses are more frequent than in the normal. The intensity of this acceleration is proportional to the concentration of the various salt solutions rather than to the decline of the surface tension phenomena.—*H. C. Sands*.

9432. WALTER, HEINRICH. Die Wassersättigung der Pflanze und ihre Bedeutung für das Pflanzenwachstum. [Water saturation of plants and its significance for plant growth.] Zeitschr. Pflanzenernähr. u. Düngung 6: 65-88. 1925.—The view is expressed that the swollen condition of the plasma is a physiological property of plants upon which the cause of all living functions is dependent.—*F. M. Schertz*.

9433. WEAVER, J. E., AND H. C. HANSON. Root development of vegetable crops. Carnegie Inst. Washington [D. C.] Year Book 24: 323-324. 1925.

9434. WEBER, FRIEDL. Theorie der Meristembildung. [Theories of meristem formation.] Naturwissenschaften 12: 289-296. 1924.—A discussion of various theories to account for the change from vegetative to meristematic tissue. The various factors influencing meristematic activity (hormones, nutritive changes, mechanical, chemical and physical conditions of the protoplasm, etc.) are considered in detail.—*Orton L. Clark*.

MOVEMENTS OF GROWTH AND TURGOR CHANGES

9435. CREMER, HANS. Untersuchungen über die periodischen Bewegungen der Laubblätter. [Periodic movements of leaves.] Zeitschr. Bot. 15: 593-656. 1923.

9436. KANGA, P. M., AND R. H. DASTUR. Physiological anatomy of the leaf-tips of *Gloriosa superba* Linn. Jour. Indian Bot. Soc. 4: 298-303. 1 pl. 1925.—The young leaf ends in a narrow sensitive tip which curls about any object with which it comes into contact, or curls spontaneously after a time without external stimulus. The epidermis of the tip is made up of elongated living cells, with striations on the outer walls; next below are 2-3 layers of elongated, thick-walled cells with living protoplasts; while the more central tissue is made up of elongated thin-walled cells without cell-contents. All cells communicate with each other through characteristic pits. The authors believe that the epidermal cells are sensory, that stimuli are transmitted to the underlying motor cells through the pits, and that curvature of the leaf tip

is brought about by contraction of the living cells on the concave side and elongation of the empty cells on the opposite side.—*Winfield Dudgeon*.

9437. MONTEMARTINI, L. Sopra la nutazione spontanea dei cotiledoni nelle piantine germinanti di *Helianthus annuus* L. [Spontaneous nutations of the cotyledons in seedlings of *Helianthus annuus*.] Bull. Soc. Bot. Italiano 1925: 125-127. 1925.—The author believes that the phenomenon of lowering of the cotyledons of germinating sunflower seed is not due to gravity as believed by Haberlandt, but to a spontaneous nutation, independent of gravity. It is due to a sensitivity of the upper part of the hypocotyl.—*P. D. Caldis*.

9438. PURDY, HELEN ALICE. Studies on the path of transmission of phototropic and geotropic stimuli in the coleoptile of *Avena*. Biol. Meddel. K. Dansk. Videnskab. Selskab. 3⁸ 1-29. 10 fig. 1921.

9439. RICÔME, H. Sur quelques phénomènes de croissance par torsion. [Torsion phenomena.] Bull. Soc. Bot. France 72: 604-608. 1925.—Geotropic manifestations may take the form of indirect reactions. The orientation of the zygomorphic flower of *Wistaria sinensis* is the result of the action of gravity, not on the floral parts but on the peduncle. The arrangement of leaves in a mosaic is to be explained in the same manner. Unequal transpiration in the 2 parts of the stem creates in the bilateral petiole a dissymmetry which makes the reaction to gravity unequal and which leads to a deformation of the petiole.—*William Seifriz*.

9440. RYWOSCH, S. Untersuchungen über die Quellungsvorgänge bei hygroscopischen Bewegungen. [The imbibition phenomena associated with hygroscopic movements.] Biochem. Zeitschr. 166: 24-46. 4 fig. 1925.—In the positive hygroscopic movements of the seed pods of *Caragana arborescens*, of the elaters of *Equisetum* spores and of the seed coats of *Vicia faba* and *Phaseolus multiflorus*, the maximum bending was associated with an unsaturated condition and not with maximum imbibition. When bending during a state of unsaturation was prevented, it did not occur later. Very high moisture content of the air was not essential to bending, nor was positive bending always reversible. With a low degree of imbibition, a correspondingly greater difference between the 2 sides was essential to bending. When this difference was slight, active bending was observed if the absolute degree of imbibition was high.—*H. D. Hooker*.

9441. SCHULZ, HELENE. Über Korrelationen zwischen den Blutenteilen und den geotropischen Bewegungen der Blutenscheitel, nach Untersuchungen insbesondere an *Papaver*. [Correlations between flower parts and the geotropic movements of the flower stem, with special reference to *Papaver*.] Jahrb. Wiss. Bot. 60: 1-66. 1921.

9442. SNOW, R. Conduction of excitation in the leaf of *Mimosa Spegazzinii*. Proc. Roy. Soc. London B 98: 188-201. 1925.—The conduction of stimuli in leaves of this plant is found to be entirely independent of the water current. It is of a different order of velocity and is not affected by factors which affect the water current. Acceleration of downward conduction and multiple, that is, wave-like, conduction are described.—*P. B. Sears*.

9443. SOKOŁOWSKI, M. Über die Bewegungen der Seitenäste der Bäume und Straucher unter dem Einfluss von Temperaturänderungen. [Movements of the side branches of trees and shrubs under the influence of change of temperature.] Bull. Acad. Sci. Cracovie 3-4 B: 313-340. 8 fig. 1924.

9444. STILES, WALTER. Irritability and movement in plants. Sci. Prog. 20: 44-49. 1925.—Here are reviewed recent papers on irritability and movement by Stark, Debbarmann, Seidel, by Small and those by several critics of his experiments on reversal of geotropism, Prankerd and Waight, supporters and opponents of Blaauw's theory of phototropic curvature, Mevius, Saxton, Scheidler, and Sperlich, Purdy, and Snow.—*L. A. Kenoyer*.

9445. STOPPEL, R., UND C. TRUMPF. Beitrag zum Problem der Schlafbewegungen von *Phaseolus multiflorus*. [Sleep movements of *P. multiflorus*.] Mitteil. Inst. Allg. Bot. Hamburg. 5: 1-16. 1922 [1923].

9446. SUESSENGUTH, K. Untersuchungen über Variationsbewegungen von Blättern. [Induced movements of leaves.] 68 p. Gustav Fischer: Jena 1922.

9447. VAN DILLEWIJN, C. The connection between light growth response and phototropic curvature of seedlings of *Avena sativa*. Proc. Koninklijke Akademie van Wetenschappen Te Amsterdam 28:⁸⁻⁹: 1-6. 2 fig. 1925.

GERMINATION, RENEWAL OF ACTIVITY

9448. BIER, AUGUST. Keimverzug. [Delayed germination.] Mitteil. Deutsch. Dendrol. Ges. 35: 187-191. 1925.—These experiments are concerned with the germination of seed of lupines that were kept about 55 years.—*J. C. Th. Uphof.*

9449. CHEMIN, E. Germination des graines de *Lathraea Clandestina* L. [Germination of seed of *L. Clandestina*.] Bull. Soc. Bot. France 72: 1013-1042. 1925.—Heinricher has proved that seed of *Lathraea* need assistance from a host plant in order to germinate. The researches of E. Chemin show that the seed of *L. clandestina* arrive at complete maturity 2-3 months after the fruit, which is very much in danger of drying, and which can germinate without the aid of an alien plant, as in other seed. The seed of *L. clandestina* contains, in fact, an adequate quantity of reserve material to assure the development of the seedling which can live alone many months before becoming a parasite.—*R. Douin.*

9450. DEGAN, A. VON. Longevity of seeds. Report of the Fourth International Seed Testing Congress, Cambridge, England, 1924. Gard. Chron. [London] III. 78: 41. 1925.—Seed of *Cassia bicapsularis* germinated after 87 years; *Cytisus biflorus* after 84 years. An estimated limit of 150 to 250 years for any seed germination is given and conditions affecting delayed germination are discussed.—*P. L. Ricker.*

9451. GLEISBERG, W. Stimulationsnachwirkung bei Samen. [After effects of seed stimulation.] Zell Stimulations Forsch. 1¹: 75-86. 1924.

9452. GOLDAMMER, H. Beizversuche mit *Asparagus Sprengeri*. [Toxic experiments with *Asparagus sprengeri*.] Gartenwelt 29: 691-692. 1925.—A small amount of uspulum, such as would be placed on the point of a knife, was dissolved in 1 liter of water in which seed of *Asparagus sprengeri* were immersed for one hour. These seed germinated 10 days earlier than those that were not treated.—*J. C. Th. Uphof.*

9453. LUTMAN, B. F. Senescence and rejuvenescence in the cells of the potato plant.—Vermont Agric. Exp. Sta. Bull. 252. 1-76. 12 pl., 5 fig. 1925.—The motive in studying senescence and rejuvenescence in the cells of the potato plant was to determine whether the internal appearance of its cells show a developmental cycle such as that which most plants annually undergo in temperate regions. The report is divided into 3 parts: (1), nuclear division and the young cells of the root tip; (2) young and old cells in the flowers, tubers, stems and leaves; (3) Rejuvenescence of the cells of the potato tuber after aging and differentiation. The general conclusions arrived at from a study of these 3 main divisions of the subject were that young cells are filled with an abundance of protein material, especially in the nuclei where it is collected in stainable aggregates of considerable size and in the very large nucleoles. Old cells were found to have less visible protein material in the nucleus in the form of granules and the bulk of the cytoplasm is filled with large vacuoles. The chromatin appeared to have been used up in the process of differentiation. The cell differentiation is considered to be a cytoplasmic process. Death was found to be preceded by a general collapse of all parts of the cell with a marked hydrolysis of the colloids. In the rejuvenescence of the starch cells of the tubers, the cells free themselves mechanically from the accumulated starch and accumulate reserve protein aggregates in the form of granules in the nucleus before they are again capable of division. Fat or fat-like substances with which to impregnate the newly formed cell walls are accumulated in the cytoplasm.—*W. Stuart.*

9454. MILLER, SALOME COMSTOCK. Comparative studies of alfalfa seeds of different shapes. Proc. Assoc. Official Seed Analysts North America 1925: 14. 1925.—Studies of the unit weight, specific gravity, germination, and germination including hard seed, made on 25 samples of selected bean-shaped, and selected irregular-shaped seed of alfalfa showed that the specific gravity of the 2 shapes is about the same; the bean-shaped seed weigh more per 1000 seed; small bean-shaped seed which weighed slightly more than irregular-shaped seed germinated slightly better than large bean-shaped seed; and germination including hard seed is definitely better in the bean-shaped seed.—*M. T. Munn.*

9455. [НОВОПРОВСКИЙ, И. В., AND F. D. SKAZKIN] Новопокровский, И. В., и Ф. Д. Сказкин. К физиологии проростания спор головки хлебных злаков. [A contribution to the physiology of germination of cereal smut spores.] (German Summary). Болезни Растений, Вест. Отд. Фитоп. Гл. Бот. Сада, Р. С. Ф. С. Р. [Jour. Div. Phytopath. Main Bot. Garden,

R. S. S. R.] 1925: 82-100. 1 pl., 2 fig. 1925.—The study of the effect of temperature upon spore germination showed optimum about 20°C. for *U. hordei*, *U. nuda* and *U. tritici*; about 25°C. for *U. avenae*, and about 30°C. for *U. panici-miliacei* and *U. maydis*. The minimum temperature is 0-5°C. for all of the above except the last 2, for which it lies between 5-10°C. The maximum temperature is 25-30°C. for *U. nuda*, 30-35°C. for *U. hordei*, *U. avenae* and *U. tritici*, and 35-40°C. for *U. panici-miliacei* and *U. maydis*. The optimum temperature for growth of the fungi is somewhat below that for spore germination. Spores of all these smuts germinated well in water except with *U. tritici* which germinated better in Artari's solution. It was found that a rest period is evidently necessary; however, the percentage of germination decreased with prolongation of storage. 27 references are given.—C. D. Sherbakoff.

9456. POMA, G. L'influence de la salinité de l'eau sur la germination et la croissance des plantes halophytes. [Influence of salinity on germination and growth of halophytes.] Bull. Cl. Sci. Acad. Roy. Belgique. V. 8: 81-99. 1922.

9457. SENFT, E. Sur les poils muqueux de l'épiderme des semences du Toxicodendron capense Thunb. Contribution à la biologie de la germination des semences. [The glandular hairs of the epidermis of *T. capense*. Contribution to the biology of seed germination.] (Příspevek ku biologii klíčení semen.) Rozpravy České Akademie, II tř., XXVIII. N° 22. 1919.

9458. TITS, D. Les excitants de la germination d'un champignon, *Phycomyces nitens*. [Stimulation of germination of *P. nitens*.] Bull. Cl. Sci. Acad. Roy. Belgique. V. 8: 219-227. 4 fig. 1922.

9459. TOOLE, E. H. Effect of light and potassium nitrate on germination. Proc. Assoc. Official Seed Analysts North America 1925: 31. 1925.—Use of a 0.2% solution of KNO_3 to moisten the substratum, and exposure of the testing material to light during part of the day was found to hasten germination of some samples of bent grasses (*Agrostis* spp.). Use of nitrate and light does not lessen the necessity for a sharp daily alternation of temperatures. The various samples of bent grasses tested showed considerable variation in their response to this treatment. Light and nitrate treatment are now used by the seed testing laboratory of the Bureau of Plant Industry, U. S. Dept. Agric., to hasten germination of seed of Canada bluegrass, Bermuda grass, freshly harvested timothy, and bent grasses.—M. T. Munn.

9460. TURESSON, GÜTE. Über den Zusammenhang zwischen Oxydationsenzymen und Keimfähigkeit in verschiedenen Samenarten. [The relation between oxidizing enzymes and germination capacity in seed of different species.] Bot. Notiser 1922: 323-335. 1922.

9461. WHITCOMB, W. H., AND W. D. DAY. Notes on the germination of broken seeds. Proc. Assoc. Official Seed Analysts North America 1925: 38-39. 1925.—A study of the effect of mutilation as shown by germination upon seed of alfalfa, corn, oats, wheat, and rye shows that in every case where the germ is injured there is a marked decrease in germination. Cutting the seed in such a way as not to injure the germ affected germination in blotters slightly or not at all, except in the case of alfalfa, but reduced total germination when the seed were tested in sand. Alfalfa was adversely affected in germination by any injury to the seed even though the germ was not broken.—M. T. Munn.

REGENERATION, CORRELATION

9462. JANSE, J. M. Ernährung, Adventivbildung und Polarität. [Nutrition, adventitious formations and polarity.] Flora 118-119: 257-288. 1925.—After a review of the forces influencing the direction of flow of nutrients (attraction of growing parts, downward flow or "basipetal impulse," and gravity) the author takes up the formation of new organs on leaves, stems and roots, with a discussion of the experimental work on the problem. He concludes that the place of appearance of adventitious formations is dependent on the basipetal impulse or the descending flow of nutrients, although due emphasis is placed on the inherited characteristics, presence of accessory meristem, and effect of gravity. The basipetal impulse calls forth the phenomenon of polarity. It is inferred that Loeb's studies on regeneration with *Bryophyllum* are easily explained by this conception of the problem.—O. L. Clark.

9463. KOČINEK, J. Ueber die Empfindlichkeit der Korrelationen bei den Pflanzen. [The sensitiveness of correlation in plants.] Summary in: Archiv Entwicklungsmech. 52: 679-680.

(Original in: Rozpravy České Akademie II, Praha) 1922.—If *Pisum sativum* seedlings are decapitated, both cotyledon axils produce buds, but they develop unequally. The difference is dependent on the quantity of food materials. In plants grown in garden soil the difference was very slight, but in sawdust frequently only 1 shoot developed. Plants were grown with equal parts of the 2 cotyledons removed to various degrees and the developing axillary shoots were compared by weight. In plants with normal cotyledons the difference was 1: 1.42; with $\frac{1}{2}$ of the cotyledons removed the relation was 1:1.54; with only a sixth of the cotyledons left the difference became 1:3.84. With a decrease of the food supply there is a greater "correlation-struggle" between the 2 shoots. It appears as though there were a direct struggle of the organs for the nourishment with victory for the stronger. There are many phenomena in nature which can be explained by a "correlation struggle."—*John H. Schaffner.*

9464. KOŘINEK, J. Ueber die Korrelation zwischen dem Keimblatt und seiner Achselknospe. [The correlation between the cotyledon and its axillary bud.] Summary in: Archiv Entwikungsmech 52: 680-681. (Original in: Pub. Facult. Sci. Univ. Masaryk. Brno) 1922.—R. Dostál found that a decided correlation exists between the cotyledon and its axillary bud. If he decapitated the seedling of *Pisum sativum* and at the same time cut off one of the cotyledons, only the axillary bud of the cut-off cotyledon developed. The author tested out this reaction on the hypogean cotyledons of *Aesculus hippocastanum* and obtained somewhat similar results. Usually the other axillary bud also develops but it rarely attains the same size as the one coming from the axil of the missing cotyledon. Plants with epigeal cotyledons act differently. In *Linum usitatissimum* it was always the bud in the axil of the undisturbed cotyledon that developed. In *Helianthus annuus* and *Fagopyrum esculentum*, sometimes one bud, sometimes the other, in nearly equal proportion, develops. In *Cannabis sativa* and *Mirabilis jalapa*, if both cotyledons are undisturbed, the shoot of the smaller cotyledon develops better, but if the one cotyledon is cut off, the shoot from the axil of the undisturbed cotyledon always develops better. The quantity of reserve material is not the cause of the growth of the shoot of the removed cotyledon. In *Pisum sativum* the one cotyledon was removed and of the other a small part was left; nevertheless, the shoot from the axil of the completely removed cotyledon developed the more vigorously. If the bud incept of the axil of the cut-off cotyledon is injured with a needle and, further, if the same is done for the undisturbed cotyledon, it was found that there was no difference in the development of the shoots of the 2 series of plants. On the other hand, it was found that if both cotyledons were cut off and only one shoot developed, it grew very vigorously. It was thus concluded that the inhibiting influence was not permanent but acted as an impulse. The problem is not solved by these experiments. The hypothesis is proposed that removing the cotyledon induces a stimulus of brief duration, which promotes the growth of the axillary shoot.—*John H. Schaffner.*

TEMPERATURE RELATIONS

9465. DAVY DE VIRVILLE, AD. Action de la température sur les mousses. [The effect of temperature on mosses.] Compt. Rend. Soc. Biol. 93: 589-590. 1925.—When grown at 2-4°C. for 2 months the plants grow only about 25% as much as under normal conditions. The leaves are very green and much anthocyanin develops.—At 30°C. all died, but *Rhacomitrium lanuginosum* showed itself more resistant than the other 17 species. At 25°C. the leaves are much smaller and much more sparsely scattered on the stems, which have only $\frac{1}{2}$ their normal diameter. The chlorophyll is less abundant and the cells are smaller. *Anomodon viticulosus* conserves its normal characters best.—*Oran Raber.*

9466. MASON, SILAS C. Partial thermostasy of the growth center of the date palm. Jour. Agric. Res. 31: 415-453. 5 pl., 6 fig. 1925.

9467. MASON, SILAS C. The minimum temperature for growth of the date palm and the absence of a resting period. Jour. Agric. Res. 31: 401-414. 4 fig. 1925.

9468. OERSKOV, J.-L. Sur la thermo-résistance du bacille tuberculeux. [Thermo-resistance of the tubercle bacillus.] Compt. Rend. Soc. Biol. 92: 400-401. 1925.—Using Petroff's medium instead of the guinea pig for determining thermal death of *B. tuberculosis*, the author showed that this organism in milk is not killed by 63°C. for 40 minutes, but that it is regularly killed by 63° for 45 minutes. The cultures on Petroff's medium were incubated

at 38°C. for 3 months. When incubated for a month only, there was apparent killing at 63°C. after a much shorter time—25–30 minutes.—*G. F. R. (Contrib. by Absts. Bact.)*

9469. VILHELM, JAN. *Thermální vegetace v Piešťanech a v jiných horkých vřídlech na Slovensku i její vztahy k radioaktivitě těchto terem.* [The thermal flora of Piešťany and other hot springs of Czechoslovakia; its relations to the radio-activity of these thermal springs.] Pub. Facult. des Sci. Univ. Charles 8. 1–40. 12 fig. 1924.

RADIANT ENERGY RELATIONS

9470. ADAMS, J. *Some further experiments on the relation of light to growth.* Amer. Jour. Botany 12: 398–412. 1925.—Wheat, Indian corn, tulip, hyacinth, buckwheat, hemp, flax, castor bean, sugar maple, black currant, alfalfa, wax bean, soy bean, potato and sunflower were grown under a constant electric illumination of 700 watts (110 volts) with daylight excluded. Only 4 of these reached the flowering stage; the flowers in each case were normal in color. Castor bean alone developed fruits and ripe seed. In certain species there is greater growth in daylight alone than in daylight plus artificial light at night, whereas in others illumination at night results in increased growth; 2 hours' exposure to light in the middle of the day seems to have an effect on growth equal to that of 3 hours divided between morning and evening. Increased temperature may compensate for decreased illumination, since it was found that a group of plants, exposed to daylight for an average of 499 hours at a mean temperature of 68.2°F., grew as well as those exposed for 568 hours at 60.8°F. Growth was as vigorous under a screen of clear glass as without it. Studies in the relation of plants to light should take into account not only the duration of light but its intensity and the temperature under which the experiments are performed.—*E. W. Sinnott.*

9471. ANCEL, S. *De la conservation de la lésion produite par les rayons X chez les graines seches.* [Duration of a lesion produced by X-ray in dry seed.] Bull. Soc. Bot. France 72: 991–995. 1925.—The X-rays cause a lesion in dormant seed, which later influences development. This author wonders, in the presence of contradictory opinions expressed on this point, what becomes of this lesion if one keeps the seed for a certain length of time before causing it to germinate. Some comparative observations made on the seed of kidney beans irradiated with doses of 200, 190, and 100 H lead one to conclude that a clean lesion of medium or strong intensity in a dry seed exists unimpaired a long time after irradiation (it was still present at the end of 9½ months in certain experiments of the author).—*R. Douin (transl.).*

9472. ANCEL, SUZANNE. *Sur les variations dans la manifestation des lésions produites par les rayons-X dans les graines en fonction du temps écoulé depuis l'irradiation.* [Variations in the harmful effects produced by X-rays on seed in relation to time following radiation.] Compt. Rend. Soc. Biol. 93: 1669–1670. 1925.—The harmful effects produced by X-rays on seed of wheat and lentils is a function of the time elapsing between treatment and germination. The longer the time before germination is permitted, the fewer seed develop.—*Oran Raber.*

9473. ANCEL, SUZANNE. *Sur les variations dans la manifestation de la lésion produite par les rayons-X dans les graines, en fonction de la température à laquelle elles se développent après l'irradiation.* [Variations in harmful effects produced by X-rays on seed in relation to temperature for germination.] Compt. Rend. Soc. Biol. 93: 1671–1672. 1925.—The harmful effect produced by X-rays is also a function of the temperature under which the seed later develop. There was less harm manifested when germination took place at 20–25° than when at 10–14°C. (see also previous entry).—*Oran Raber.*

9474. ANCEL, S. *Sur un phénomène de pseudo-excitation déterminé par les rayons-X sur les bourgeons dormants cotyledonaires de la lentille.* [The phenomenon of pseudo-excitation determined by X-rays on the dormant cotyledonary buds of the lentil.] Bull. Soc. Bot. France 72: 1048–1089. 1925.—Irradiating with a dose of 8 H a lot of germinated lentils the stems of which were 8–10 mm. long, taking care to protect the roots under a rubber plate fitted with lead, the author notes after 5 days, the development of the dormant cotyledonary buds which did not develop. Is there excitation of the buds by the X-rays? Various experiments show that this is not so: If the stem of the lentil is cut at the 10 mm. point, the cotyledonary buds start to develop; the result is the same if a lesion of the stem is caused by strong X-ray doses, with protection of roots and cotyledons; if with the same doses one irradiates the entire

plant, development of the buds, which are equally injured, can not be observed; with a feeble dose of X-ray (4 H) only a part of the buds come out, the stem lesion being most often insufficient to stimulate development of buds. The development is, then, a simple phenomenon of direct cellular excitation.—*R. Douin. (transl.)*.

9475. BRUYNOGHE, R., ET J. MAISIN. Action des rayons β et γ du radium sur la pousse des racines de *Pisum sativum*. [Action of beta and gamma radium rays on the growth of *P. sativum* roots.] *Compt. Rend. Soc. Biol.* 93: 851-852. 1925.—The rays checked the growth of the plant and the mitoses were rare and abnormal.—*Oran Raber*.

9476. CHAVARRIA, ANTONIO PENA, AND JANET H. CLARK. The reaction of pathogenic fungi to ultra-violet light and the rôle played by pigment in this reaction. *Amer. Jour. Hyg.* 4: 639. 1924.—“X-rays up to 10 skin doses, have a slightly stimulating action on pathogenic fungi of the skin. Visible and near ultraviolet light, together, are stimulating in moderate doses, but have a slightly inhibitory effect in heavy doses on non-pigmented fungi. Non-pigmented fungi, in vivo and in vitro, may be sensitized by eosin and easily killed. Far ultraviolet light has a strong lethal action on non-pigmented fungi. Pigmentation is a defensive mechanism which favors stimulation and prevents lethal action.”

9477. DEATS, MARIAN E. The effect on plants of the increase and decrease of the period of illumination over that of the normal day period. *Amer. Jour. Botany.* 12: 384-392. 2 pl. 1925.—Dwarf nasturtiums planted early in August began to flower in a period about 10 days less than was required by those planted in the middle of June. Tomatoes and peppers were subjected to long, normal and short days in the greenhouse during the winter. The former species produced most flowers and set most fruit under a long day, the latter under a normal day. With both species, amount and rate of growth, amount of bast, wood and cork, thickness of cell walls, size of epidermal cells, size, thickness and color of leaves, sap concentration in leaf cells and amount of starch in stems were found to be directly proportional to length of day. Certain of these relations are probably not directly due to length of day but to changes in the nitrogen-carbohydrate ratio induced by different day-lengths.—*E. W. Sinnott*.

9478. DUFRÉNOY, J. Action des radiations ultra-violettes sur les zoospores de *Blepharospira cambivora* Petri et de *Phytophthora omnivora parasitica*. [Action of ultra-violet radiations on zoospores of *B. cambivora* and of *P. omnivora parasitica*.] *Rev. Path. Vég. et Entomol. Agric.* 12: 270-271. 4 fig. 1925.

9479. GERICKE, W. F. Effect of light on availability of iron to wheat plants in water cultures. *Bot. Gaz.* 80: 106-108, *Fig. 1*. 1925.—The requirement of wheat plants for iron is modified by the varying intensities of light. With deficient iron a high degree of illumination produces etiolated plants. With a lesser intensity of light the iron deficiency is not apparent. The degree of maturity of the plants varies directly as the intensity of illumination. The observations show the impossibility of prescribing definite amounts of material for plant growth.—*L. G. Willis*.

9480. GURWITCH, ALEXANDER. The mitogenetic rays. *Bot. Gaz.* 80: 224-226. 1 fig. 1925.—A report on some new facts relative to the author's previous work on induction of mitoses at a distance. The latter is accomplished by means of root tips placed near but not in contact with other root tips, the stimulus in question being the “mitogenetic rays” emitted by the root tips, which stimulate an excessive number of mitoses on the sides facing other root tips. In the present paper it is claimed that heteroinduction from a *Helianthus* root to an onion root tip is possible. Further induction upon onion roots by the use of embryonic animal tissue (small tadpoles), is claimed. The induction may be effected through both water and air and may be obtained through distances as great as 38 mm. Interposition of glass (cover slip) reduces but does not suspend the phenomenon. The interposition of onion skin causes “dispersion of the ray,” with concomitant dispersion of the effect in the root tip. It is suggested that the wave length of the ray is in the neighborhood of 2000 Angstrom units.—*B. W. Wells*.

9481. GURWITSCH, ALEXANDER. Physikalisches über mitogenetische Strahlen. [The physics of biological rays.] *Arch. Mikrosk. Anat.* 103: 490-498. 1 fig. 1924.—This is a discussion of some physical factors relating to the hypothetical biological rays emanating from the root bundle and measured by their capacity to induce mitoses. Onion or onion and helian-

thus roots were used as the inducing and induced agents. The problem of radiation parallel to the root axis is discussed and the nature of refraction indices with the application of Fraunhofer's formula for measurement of diffraction effects, is suggested. The rays are believed to have been demonstrated as illustrated by differential counts of division figures between 2 sides of a root to which the point of another root was perpendicularly or otherwise applied with a small separation interval. The rays are believed to have a shorter wave length than any of the visible light rays, but to be different from ultra-violet rays, since they are not absorbed by water. Perhaps they lie in the little-known region between ultra-violet and Lyman rays. In view of the technical principles involved in the setup of the apparatus it is suggested that the reader consult the original for further details.—*H. C. Sands.*

9482. JEFFS, R. E. The elongation of root hairs as affected by light and temperature. *Amer. Jour. Botany* 12: 577-606. 1 pl., 6 fig. 1925.—*Raphanus sativus* and *Sinapis alba* were studied. The grand period of elongation of the root hair resembles that for plant tissues in general, except that the middle of the curve is very flat. There is a gradual increase in rate at the beginning and a gradual diminution at the close. There is little difference in growth rate among the root hairs of any one root. On species with many root hairs, the hairs elongate more slowly than on those with fewer hairs. The rate of root hair elongation is accelerated as the lateral movement of the hair is retarded. Root hairs of both species show no noticeable light-growth reaction in light intensities up to 3,153,600 M. C. S. When grown at 17-27°C. they show decided reactions to changes in temperature of 1-6 degrees brought about in a period of 5-15 minutes. Cooling results in a decrease or cessation of growth and in some cases growth is not resumed. A rise in temperature of 2.5-3 degrees results in a temporary increase in growth rate. The effect of temperature on growth is due in part to an effect upon osmotic pressure and imbibition rather than upon rate of chemical reaction. It is concluded that the light-growth reaction in multicellular organs is not due to change in rate of cell elongation but to some other light effect, such as a change in rate of cell division, but that the temperature reaction in such organs is due to changes in rate of cell elongation.—*E. W. Sinnott.*

9483. KAGEYAMA, J. Mathematische Untersuchungen über das Verhältnis zwischen der Sonnenlichtintensität und dem Baumzuwachse. (I) Theoretische und empirische Untersuchungen über den zahlenmässige Ausdruck für das Schattenertragnis der Waldbäume insbesondere Pflanzlinge. [Mathematical investigations on the relation between sun-light intensity and tree growth. (I) Theoretical and empirical investigations of the numerical expression of the shade endurance of forest trees, especially seedlings.] *Res. Bull. Coll. Exp. Forests Hokkaido Imp. Univ.* 2³: 1-124. 1923.

9484. KAGEYAMA, J. Mathematische Untersuchungen über das Verhältnis zwischen der Sonnenlicht-intensität und dem Baumzuwachse. (II) Über die einigen auf das Schattenertragnis der Waldbäume einwirkenden Faktoren. (III) Über die, indirekten Lichtmessungsmethoden im Walde und deren Anwendung für die natürliche Verjüngung. [Mathematical investigations on the relation between sun-light intensity and tree growth. (II) Factors influencing the shade endurance of forest trees. (III) The indirect measurement of light and its use in natural rejuvenescence.] *Res. Bull. Coll. Exp. Forests Hokkaido. Imp. Univ.* 2⁴: 1923.

9485. KOMURO, HIDEO. Die Wirkung der harten und weichen Röntgenstrahlen auf die Samen und jungen Pflanzen von *Vicia faba* und die Röntgengeschwulst, die in dem Wurzelspitzen-gewebe dieser Pflanzen gebildet wird. [Effect of hard and soft Röntgen rays on the seed and young plants of *Vicia faba* and the Röntgen swelling, formed in the root tip tissues of this plant.] *Zeitschr. Krebsforsch.* 22: 199-209. 1925.—The soft rays exert a much stronger physiological and cytological effect than do the hard rays. The duration of the cytological change brought about by the soft rays differs more or less from that occasioned by the hard rays. In young plants the cytologic alteration takes place immediately after treating with the soft rays; in case of hard rays, several hours later. Distinct nodules are formed by the soft rays on seed soaked for several hours. (Discontinuous 2-hour treatment calls forth these tubercles in 12-14 days after the 2nd treatment.) There is a definite difference in the cytological modification in the root tips of seedlings, produced by seed treated in air dried condition; the soft rays effect a stronger modification than the hard

rays. The discontinuous treatment exerts a stronger physiological effect and shows also a more definite cytological change than the continuous treatment. The remarkable thing about plant swellings is the fact that the vascular bundles are either supported by the nodules or sometimes concentrated around them.—*M. N. Levine.*

9486. KOTZAREFF, A., ET FERNAND CHODAT. De l'action exercée par l'émanation du radium sur les levures. [Action of radium emanations on yeasts.] *Compt. Rend. Soc. Phys. Hist Nat. Genève* 40: 36-39. 1 fig. 1923.

9487. MASON, SILAS C. The inhibitive effect of direct sunlight on the growth of the date palm. *Jour. Agric. Res.* 31: 455-468. 1925.

9488. NADSON, G. Sur l'accélération du tempo de la vie et le vieillissement prématuré chez les organismes inférieures sous l'influence des rayons-X et du radium. [The acceleration of the life tempo and the premature ageing in the lower organisms caused by X-rays and radium.] *Compt. Rend. Soc. Biol.* 93: 1585-1586. 1925.—From numerous studies made on yeasts, bacteria, and molds it is concluded that radium and X-rays simply accelerate the life processes and result in premature ageing and death. Their effect is that of early maturation and senescence.—*Oran Raber.*

9489. NADSON, G. A., AND A. ĬA. ZHOLKEVICH. Kalium als Antagonist der Röntgenstrahlen und des Radiums. [Potassium as an antagonist of Röntgen rays and of radium.] *Biochem. Zeitschr.* 163: 457-463. 1925.—Premature senescence induced by radium or by Röntgen rays in cells of *Saccharomyces cerevisiae* was prevented by the presence of 0.5-1.5 per cent KCl in the nutrient medium.—*H. D. Hooker.*

9490. [NADSON, G. A., AND A. ĬA. ZHOLKEVICH.] Надсон, Г. А., и А. Я. Жолкевич. О комбинированном действии света и красок на растения. [The combined action of light and pigments upon plants.] *Вестник Рентгенологии и Радиологии* [Bull. Roentgenol. and Radiol.] 3: 135-142. 1924. Neutral red, possessing a weak fluorescence, produces a considerable photodynamic effect upon plants in comparison with the strongly fluorescent eosin. The non-fluorescent fuchsin produced a very strong influence in the light, both in its photodynamic effect and in the increase of its toxicity to the plant. Fluorescence in itself is not required for photodynamic action and does not represent a specifically active factor. The process under consideration is a phenomenon of "sensitization" of the organism, in the broadest sense. In general, photodynamic action is a toxic action of the substance upon the organism, increased by light.—*S. A. Waksman.*

9491. [NADSON, G. A., AND A. ĬA. ZHOLKEVICH.] Надсон, Г. А., и А. Я. Жолкевич. О комбинированном действии радия и химических реагентов на растения. [The combined action of radium and chemical reagents upon plants.] *Вестник Рентгенологии и Радиологии*. [Bull. Roentgenology and Radiology] 3: 85-106. 1924.—Various chemical substances, both inorganic (CuSO_4 , KI, I) and organic (chloral hydrate, eosin), introduced into the plant increase its sensitiveness to radium or Roentgen rays, so that the combined action of the chemical substance and radium produces a greater retardation of development and greater pathological deviation from the normal than of each factor alone. This is not due to the formation and action of secondary rays in the organism but to a simple summation of depressive action of the given factors. In some cases, the introduction of KI into the organism did not increase, but even diminished, and sometimes fully annulled, the action of radium; this antagonistic action is due to K, since I brings about an increase in the depression caused by radium. The phenomenon of narcosis brought about by chloral-hydrate greatly increases the depressive action of radium. The depression of the photodynamic action of the plant as a result of the combined action of eosin and radium is also a summation phenomenon. By sensitizing the organism with chemical reagents, a smaller dose of radium or Roentgen rays will produce the same effect as a larger dose, without chemical sensitization.—*S. A. Waksman.*

9492. NOGIER, T. Action tres faible de fortes doses de rayons x sur de graines de ray-grass et de balsamines. [The feeble effect of strong exposures of X-rays on ray grass and on balsam.] *Lyons Med. czxi + 1017-1019 p.* 1922.

9493. PAULI, W. E., UND A. HARTMANN. Über die Wirkung von Kathodenstrahlen auf lebendes Gewebe. [Influence of cathode rays on living tissue.] *Arch. Mikrosk. Anat.* 103: 95-167. 28 fig. 1924.—*Spirogyra*, *Oedogonium*, *Paramecium* and tissues of some vertebrates

were treated with cathode rays. In general, the effects were similar to the effects of Röntgen rays. Harmful effects were produced and overdoses led to eventual death of the cells. In the case of tissue cells, these may be regenerated from healthy undamaged neighboring cells. The therapeutic effect is of interest only where the destruction of tissue is involved and the rays may not be considered as a stimulant for tissue proliferation and growth.—*H. C. Sands.*

9494. POKROWSKI, G. I. Über die Lichtabsorption von Blättern einiger Bäume. [Light absorption by tree leaves.] *Biochem. Zeitschr.* 165: 420-426. 1925.—The amount of light reflected and transmitted by leaves of *Populus tremula*, *Tilia parvifolia*, *Fraxinus excelsior*, *Ulmus effusa*, *Castanea*, and *Acer platanoides* was measured for various wave-lengths. Variations in the reflection spectra were accounted for by differences in surface reflection and dispersion. The energy absorbed by *Tilia parvifolia* and *Fraxinus excelsior* leaves is calculated.—*H. D. Hooker.*

9495. PRIESTLEY, J. H. Light and growth I. The effect of brief light exposure upon etiolated plants. *New Phytol.* 24: 271-283. 4 pl., 1 fig. 1925.—Experiments on *Pelargonium*, *Polygonum cuspidatum*, *Vicia Faba* and *Lens esculenta* show that etiolated plants are very sensitive to daily exposures to light of only a few minutes duration. Many contradictions in the literature of etiolation are due to this fact. The morphological changes in etiolation are not due to the absence of photosynthetic products, but rather to the photocatalytic effect of light on the products of metabolism in the shoot.—*I. F. Lewis.*

9496. SABALITSCHKA, T., UND C. JUNGEMANN. Einfluss des Lichtes auf den Alkaloidgehalt von *Lupinus luteus*, L. [Effect of light on the alkaloid content of *L. luteus*.] *Biochem. Zeitschr.* 164: 279-287. 1925.—The alkaloid content of seed of *Lupinus luteus* grown 2 weeks on a N-free seed-bed was less when grown in the dark than in the light. Plants grown 2 weeks in the dark followed by 2 weeks in the light contained 30% more alkaloid than normal plants. The production of plant substance was also greater. A subsequent period of 2 weeks in the dark induced marked injury and loss of alkaloid. Both the absolute amount and the percentage decreased. Plants 14 weeks old that had been shaded 1 week contained considerably less alkaloid than check plants, though the percentage content was greater.—*H. D. Hooker.*

9497. STEIN, E. Einfluss von Radiumbestrahlung auf Antirrhinum. [Influence of radium emanation on *Antirrhinum*.] *Zeitschr. Indukt. Abstamm. Vererb.* 27: 241-242. 1922.

9498. TASAKI, TOMOKICHI. Über die Absorptionsspektren der Pflanzenfarbstoffe der Flavonreihe. II. Über den Einfluss der Methoxylsubstitution auf die Absorptionsspektren der Flavone und Flavonole. [Absorption spectra of plant pigments of the flavone series. II. Influence of methoxyl substitution on the absorption spectra of the flavones and flavonols.] *Acta Phytochim.* 2: 119-128. 1 pl., 7 fig. 1925.—In the flavones, as in the previously studied chalcone and benzophenone derivatives, the replacement of a hydroxyl by a methoxyl group produces no change in the absorption spectrum; but flavonols, when methylated, exhibit a marked hypsochromic displacement of the first of the 2 absorption bands characteristic of the flavone series. This change is attributed to the stabilization of the pyrone hydroxyl by its methylation, the other series studied having only benzene hydroxyls.—*H. S. Wolfe.*

9499. TASAKI, TOMOKICHI. Über die Absorptionsspektren der Pflanzenfarbstoffe der Flavonreihe. III. Die Absorptionsspektren einiger Flavon- und Flavonolglykoside. [Absorption spectra of plant pigments of the flavone series. III. The absorption spectra of a few flavone and flavonol glucosides.] *Acta Phytochim.* 2: 129-137. 1 pl., 5 fig. 1925.—In the glucosides, robinin, campheritrin, quercitrin and myricitrin the sugar residue is linked through the pyrone hydroxyl of the flavonol, while in acaciin, apiin, rutin and toringin the glucoside linkage is through one of the benzene hydroxyls. The 1st group are all flavonol glucosides, but rutin of the 2nd group is also a flavonol derivative, although not linked through the flavonol hydroxyl. Studies indicate that only the position of replacement, and not the nature of the substituted group, affects the absorption spectrum.—*H. S. Wolfe.*

9500. WANN, FRANK B. Some of the factors involved in the sexual reproduction of *Marchantia polymorpha*. *Amer. Jour. Botany* 12: 307-318. 4 pl. 1925.—Young gametophytes of this species, well established and growing vigorously, were exposed to various day-lengths and responded in a manner similar to that of "long-day" plants among seed plants, the longer light periods hastening and the shorter retarding the appearance of sexual organs. Artificially

lengthened days in the winter resulted in the production of antheridiophores in 3-4 weeks, archegoniophores in 6-8 weeks and mature sporophytes in 10-12 weeks. Marchantia material at all stages may thus readily be had for class work at any desired time. High humidity tends to hasten the production of sexual structures and low humidity to retard or inhibit them. A relatively low nitrogen to high carbohydrate ratio in the culture medium may result in the formation of sexual branches.—*E. W. Sinnott.*

TOXIC AGENTS

9501. BURK, VICTOR, AND LLOYD BURKEY. Modifying rhizobium radicicolum. Soil Sci. 20: 143-147. 1925.—By repeatedly growing *Rhizobium radicicolum* on agar to which gentian violet had been added the tolerance of the organism for the dye could be increased; this increased tolerance, however, was quickly lost when the organism was again grown on dye-free agar.—*P. L. G. (Contrib. by Absts. Bact.).*

9502. CASTAN, P. L'action de l'acide benzoique sur les levures. [Action of benzoic acid on yeasts.] Compt. Rend. Soc. Phys. Hist. Nat. Genève. 41: 141-142. 1924.

9503. CLAUS, E., UND W. MOSIG. Beizversuch mit Buschbohnen. [A toxicity experiment with beans.] Gartenwelt 29: 203-205, 237-239. 3 fig. 1925.—The effects of "germisan" and "uspulun" on the germination of beans are briefly reported.—*J. C. Th. Uphof.*

9504. FAIRHALL, LAWRENCE T. The theory of disinfection. Military Surgeon. 50: 295-305. 1922.

9505. GIEMSA, G. Lässt sich die Spirochaeta pallida an Wismut gewöhnen? [Does *S. pallida* become acclimatized to bismuth?] München Med. Wehnschr. 72¹: 377-379. 1925.—No absolute bismuth tolerance was obtained and there was little evidence of even a limited tolerance.—*N. K. (Contrib. by Absts. Bact.).*

9506. HADLEY, PHILIP. The action of the lytic principle on capsulated bacteria. Proc. Soc. Exp. Biol. and Med. 23²: 109-111. 1925.

9507. HILPERT, S. Über bakterizide Eigenschaften in der Chinongruppe. [Bactericidal properties in the quinone group.] Biochem. Zeitschr. 166: 71-88. 2 fig. 1925.—*Bacterium coli* was much more sensitive to quinone than staphylococci and less sensitive to chloranil. The toxic action of quinone on *B. coli* disappeared in alkaline solution. The toxicity of quinone homologues decreased with increased substitution. Toxicity is attributed to combination with primary amido groups in the cell wall.—*H. D. Hooker.*

9508. HILPERT, S. Über eine neue Klasse von Desinfektionsmitteln: Chlorierte hochmolekulare Sulfosäuren. [A new class of disinfectants: chlorinated sulphonic acids of high molecular weight.] Biochem. Zeitschr. 166: 89-94. 1 fig. 1925.—Chlorinated sulphite liquor has bactericidal properties, being toxic to staphylococci and meningococci. *Bacterium coli* was relatively resistant to its action. Chlorinated anthracene sulphonic acid had similar properties.—*H. D. Hooker.*

9509. KARWACKI, L. ET S. BIERNACKI. Action in vitro de quelques substances chimiques sur le développement des bacilles tuberculeux. [Action in vitro of some chemicals on the development of tubercle bacillus.] Ann. Inst. Pasteur. 39: 476-483. 1925.—The effect of 36 drugs and 20 dyes on the growth of the tubercle bacillus in vitro has been studied. Of the drugs, the cyanides of gold and potassium were the most effective against its development, while sodium and calcium benzoate were the least effective. In general the drugs studied had only feeble bactericidal properties. Of the dyes, thioflavine and methylene blue were the most efficient while methyl-aureimine was the least efficient.—*L. A. J. (Contrib. by Absts. Bact.).*

9510. LESAGE, PIERRE. Reprise de la vie active des boutures après séjour dans les solutions. [Recovery of cuttings after immersion in certain solutions.] Bull. Soc. Sci. et Med. Ouest 29: 1-4. 1920.—The author reports upon the action of alcohol at 94°C. and of solutions of NaCl (15% and 30%) upon cuttings of a few plants as shown by their subsequent recovery and growth.—*Freeman S. Howlett.*

9511. MAKKUS. Steigerung der Gemüseerträge durch Stimulation. [Increase in production of vegetables due to stimulation.] Gartenwelt 29: 12-13, 44-45. 7 fig. 1925.

9512. NEGELEIN, E. Über die Wirkung des Schwefelwasserstoffs auf chemische Vorgänge in Zellen. [Action of hydrogen sulphide on chemical processes in cells.] Biochem.

Zeitschr. 165: 203-213. 1 fig. 1925.—Respiration by yeast was inhibited by H_2S at a concentration of 10^{-4}n ; fermentation was not inhibited at concentrations less than 6×10^{-3} . The Blackman reaction in carbon assimilation by *Chlorella* was inhibited by 10^{-6}n , nitrate assimilation was inhibited by 10^{-4}n , while respiration was stimulated at the same concentration, the respiratory quotient remaining unchanged. H_2S had much the same effect on respiration, fermentation and assimilation as HCN .—H. D. Hooker.

9513. SCOTT, R. D., AND G. M. McCURE. The hydrogen ion concentration of lime treated water and its effect on bacteria of the colon-typhoid group. Jour. Amer. Water Works 11: 578-604. 1924.

9514. ÜLEHLA, V. The effect of narcotics on living cells. Carnegie Inst. Washington [D. C.] Year Book 24: 144-145. 1925.

9515. VILLEDIEU, G., ET MME. VILLEDIEU. Comment agissent les bouillies bordelaises alcalines. [The mode of action of alkaline bordeaux mixtures.] Prog. Agric. et Vitic. 82: 567-573. 1924.

9516. WEBER, FRIEDL. Physiologische Ungleichheit bei morphologischer Gleichheit. [Physiological dissimilarity with morphological similarity.] Oesterreich. Bot. Zeitschr. 74: 256-261. 1 fig. 1925.—Physiological research depends much on the similarity and comparison of reactions of the material investigated. In cell physiology, especially, morphological homogeneity depends very little on physiological identity. The author made cultures of *Elodea* (1) in aqueous KNO_3 solution and (2) in water poisoned by a copper wire. In the 1st case, after 1-2 weeks at the base of the leaf whorl symmetrical dead spots in both young and old leaves appeared. In the 2nd experiment a limited area near the base of the leaf died first.—H. Cammerloher (transl.).

9517. YAOI, HIDETAKE. On the influence of acids upon the viability of bacteria. Jour. Lab. and Clin. Med. 10: 735-751. 1925.

9518. ZIKES, H. Über den Einfluss von Bakteriofluorescein auf Protozoen. [The influence of bacteriofluorescein on protozoa.] Centralbl. Bakt. [etc.] II Abt. 65: 128-230. 1925.—Bacterio fluorescein exerts a definitely toxic action upon various protozoa.

ELECTRICITY AND MECHANICAL FORCES

9519. CARL, J. Die Einwirkung sehr schwacher elektrischer Ströme auf Kleinlebewesen. [Effect of very weak electrical currents upon microorganisms.] Zeitschr. Immunitätsforsch. u. Exp. Therap. Teil I. 42: 416-424. 1925.—The results of others who have determined that bacteria are negatively charged were confirmed by experiments with the Michaelis-Verworn apparatus. The charge upon bacteria can be reversed without killing the organism and dead bacteria are also usually negatively charged. The charge upon the bacterial cell is apparently independent of the life of the cell. The lethal action of disinfectants upon bacteria is independent of the electrical charge upon the bacteria.—S. B. J. (Contrib. by Absts. Bact.).

9520. STERN, KURT. Elektrophysiologie der Pflanzen. Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere, Band 4. [Electrophysiology of plants.] vii + 219 p. Julius Springer: Berlin, 1924.

MISCELLANEOUS

9521. ANONYMOUS. Aus den Forschungen und den Jahresberichten der Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften. [Excerpts from the researches and Annual Reports of the Kaiser Wilhelm-Gesellschaft zur Förderung der Wissenschaften.] Naturwissenschaft. 13: 975-1055. 1925.—This number contains reprints of articles from the above mentioned report, of which the following are of botanical interest: HARTMAN, MAX. Über relative Sexualität bei *Ectocarpus siliculosus*. [Relative sexuality of *Ectocarpus siliculosus*.] P. 975-980. MEYERHOF, OTTO. Über den Einfluss des Sauerstoffs auf die alkoholische Gärung der Hefe. [Influence of oxygen on alcoholic fermentation by yeasts.] P. 980-985. WARBURG, OTTO. Versuche über Kohlensäureassimilation. [Researches on the assimilation of carbon.] P. 985-993. NEUBERG, CARL, UND FRITZ WINDISCH. Vom Wesen der Essig Gärung und von verwandten Erscheinungen. [Nature of acetic acid fermentation and related

processes.] *P. 993-996.* ABDERHALDEN, EMIL. Weitere Ergebnisse auf den Gebiete der Erforschung der Structur der Eiweissstoffe. [Further results from the field of research on the structure of protein substances.] *P. 999-1000.*—Orton L. Clark.

9522. ADRIANO, F. T. The proximate chemical analysis of Philippine foods and feeding stuffs. *Philippine Agric.* 14: 57-91. 1925.

9523. BECHHOLD, H., UND L. VILDA. Die Sichtbarmachung von Albumin-Molekülaggregaten und anderen subvisiblen Gebilden. [The rendering of protein molecule complexes and other subvisible structures visible.] *Biochem. Zeitschr.* 165: 250-260. 1925.—Microorganisms, proteins, etc., were treated with gold chloride, washed by ultrafiltration, dried, and burned. Treatment with hot gold chloride solution containing potassium carbonate and potassium ferricyanide with subsequent addition of formaldehyde intensified the gold originally fixed by the protein until it was clearly visible in the ultra-microscope.—*H. D. Hooker.*

9524. CANALS, E., ET R. GENEVEY. L'eau distillé en biologie. [Distilled water in biology.] *Bull. Soc. Chim. Biol.* 7: 673-677. 1925.—Water redistilled from baryta changes in pH from 6 to 66 in 3 days, the conductivity meanwhile changing from 5.2×10^{-6} to 10×10^{-6} , if stored in ordinary glass. In Pyrex glass, the change of pH is from 5.9 to 6.2 and that in conductivity from 3.8×10^{-6} to 3.2×10^{-6} . The attack of OH-ions upon the glass and the consequent rise in electrolyte content of the water is very much greater than in water redistilled from an oxidizing solution, such as H_2SO_4 and potassium dichromate.—*Joseph S. Caldwell.*

9525. CANNON, W. A. Experimental studies on roots. *Carnegie Inst. Washington [D. C.] Year Book* 24: 289-298. 1925.

9526. COOK, H. A. Determination of the hydrogen-ion concentration in the cane factory, using indicators. *Australian Sugar Jour.* 27: 602-606. 1925.—This is an abridged presentation of a paper which was read at the third annual meeting of the Association of Hawaiian Sugar Technologists, Honolulu, 1924. The subject is discussed from several standpoints, such as litmus and phenolphthalein; colorimetric methods, using other indicators; apparatus used and method of procedure; and application to cane factory practice.—*Nellie E. Fealy.*

9527. KLEIN, GUSTAV. Zur Aetiologie der Thyllen. [Etiology of tyloses.] *Zeitschr. Bot.* 15: 417-439. 1923.—If wounds were hermetically sealed no tyloses developed in plants which normally develop wound tyloses. If, however, the medium used for closing the wound did not make a hermetical seal the tyloses developed, especially above. If cracks or fissures developed in the seal the tyloses appeared in greatest number in the sector under the fissures. Twigs cut under water or oil showed no tylose formation, while those cut in the air developed them, though more slowly than normal. These facts indicate that wound stimulation as such, the entrance of air at normal pressure, the breaking of the water column or the higher oxygen content of the air are not the direct causes of wound tyloses. Suction experiments on twigs, stems and roots confirm Winkler's findings, that tyloses do not develop. Experiments in which water was sucked or forced through one side of a twig and air through the other showed that whether the parenchyma cells bordering the vessels were in contact with air or water determined whether tyloses arose or not. This was confirmed by experiments in which air was sucked through some of the vessels and water through others. Since experiments with woody twigs and stems (*Robinia* and *Vitis*), vegetative organs (*Hedera* and *Boehmeria*), and aerial roots of *Monstera deliciosa* gave the same results, there is no reason to group tyloses according to organs.—*Author (translated).*

9528. KOKETSU, RICHIRO. Über Zuckerbestimmung mittels des Verdunnungsverfahrens. [Sugar determination by the dilution method.] *Japanese Jour. Bot.* 2: 71-74. 1924.

9529. LINDFORS, K. R. Efficiency of filtration judged by physical tests. *Internat. Sugar Jour.* 27: 653-656. 1925.—The present methods followed in sugar factory laboratories do not furnish reliable information regarding filtration effectiveness of different kinds of filter presses or the improvement obtained through treatment with clarification processes and filter aids. In this paper the author undertakes to introduce rapid uniform methods of physical examination and standards of visible and colloidal turbidity, and these and surface tension and viscosity are discussed in detail.—*Nellie E. Fealy.*

9530. MACDOUGAL, D. T. Laboratory for plant physiology. *Carnegie Inst. Washington [D. C.] Year Book* 24: 137-169. 1925.—A report is given of investigations of the laboratory

on growth, hydration and permeability, pressure and movement of sap, photosynthesis, soil biology, and ecology.—*Frederick V. Rand.*

9531. MONTEMARTINI, L. Su un tentativo di somministrazione di carbonio alle piante verdi. [An attempt to administer carbon to green plants.] Rend. R. Ist. Lombardo Sci. e Lett. 58: (1-8). 1925.—Preliminary experiments on dusting leaves with a commercial fungicide, "Vegetina," whose basis is carbon, have shown that in 49 experiments, 31 indicated increased photosynthetic activity in dusted leaves.—*P. D. Caldis.*

9532. [NADEJDIN, A. M.] Надеждин А. М. Несколько данных о влиянии способа отбора средней пробы и получения мяжи-при помощи свердла и но пресса Вольского, или на шерке Keil-Dolle-холодной и горячей дигестии и дигестии в кодбах и спаканчиках на резульшашы определения сахара в свекловице. [A comparison of sugar determinations on sugar beets made with pulp obtained by the Voljski press or Keil Dolle grater and by hot or cold water extraction in flasks or breakers.] Бюл. сорш.-сем. упроб. сахаропресса. [Bull. Plantbreed. Section of Sugartrust, Kiev] 8: 51-61. 1924.—Pulp obtained by the Keil Dolle grater showed less sugar than the pulp obtained by the Voljski press, the difference being 1.23% and the variability between 0.5 and 2.3%. Theoretical considerations indicate that the Keil-Dolle method is more accurate. Increase in time of cold water extraction from 15 to 45 minutes increased the sugar percentage. On the average, (38 tests) 15 minutes of hot extraction gave 0.07% more sugar than cold extraction. If extraction is made in Schtiff's flasks a higher percentage of sugar is obtained than if extraction is made in beakers. Difficulty with bubbles when analysis is made in flasks makes the analysis in beakers more convenient when the work is done on a large scale.—*M. Demerec.*

9533. PETERSON, W. H., E. G. HASTINGS, AND E. B. FRED. A study of the principal changes which take place in the making of silage. Wisconsin Agric. Exp. Sta., Res. Bull. 61. 1-32. 1925.

9534. PLANTEFOL, L. Appareil pour le dosage de l'acide carbonique et de l'oxygène de l'air. (Modification de l'appareil de Laulanie.) [Apparatus for measuring carbon dioxide and oxygen in air. Modification of Laulanie's apparatus.] Bull. Soc. Chim. Biol. 7: 638-651. 4 fig. 1925.—The modifications of Laulanie's apparatus consists of improvements in the connections, the use of a 4-way stopcock, and some changes in the assembling of the comparator. The technique is fully described.—*Joseph S. Caldwell.*

9535. ROSE, A. R. Eliminating confusion in colorimetric calculations. Proc. Soc. Exp. Biol. and Med. 23: 219-220. 1925.

9536. ROSENTHALER, L. 2. Beobachtungen an Stärkekörnern. [Observations upon starch grains.] Schweiz. Apoth. Zeitg. 61: 654-659. 1923.—The behavior of various starch grains when acted upon by N/6.25 solution of KOH, and by a 15½% solution of HCl is described. The time required for swelling differs.—*Charles C. Plitt.*

TAXONOMY OF VASCULAR PLANTS¹

J. M. GREENMAN, *Editor*

E. B. PAYSON, *Assistant Editor*

(See also in this issue Entries 5834, 5886, 5895, 6236, 6324, 6504, 6541, 6672, 6673, 6676, 6688, 6694, 6767, 6828, 6940, 6985, 6992, 7379, 7524, 7803, 7913, 7945, 7959, 7964, 7989, 8052, 8138, 8151, 8160, 8215, 8220, 8230, 9086, 9089)

GENERAL

9537. BUXBAUM, F. Vergleichende Anatomie der Melanthioideae. [Comparative anatomy of the Melanthioideae.] Repert. Spec. Nov. Regni. Veg. Beihefte 29: 1-80. 32 fig. 1925.

9538. CRAIB, W. G. Florae Siamensis Enumeratio. A list of the plants known from Siam

¹Proof of this Section checked by Walter Steckbeck, University of Pennsylvania.

with records of their occurrence. Part I. 198 p., ? 1 map. The Bangkok Times Press: Bangkok, 1925.—The present part enumerates the known plants of Siam from the Ranunculaceae to *Elaeocarpus varunua* Ham. of the Elaeocarpaceae, inclusive. The author records the essential bibliography and a limited amount of synonymy, indicates the habitat and geographical distribution, cites numerous exsiccatae, and gives local names. The following new varieties and new combinations are included: *Clematis smilacifolia* Wall. var. *grandifolia*, *Naravelia axillaris* Ridl. var. *grandiflora*, *N. axillaris* var. *paniculata*, *N. dasyoneura* Korth. var. *siamensis*, *Delphinium stapeliosmum* P. Bruhl var. *siamense*, *Aromadendrum spongocarpum* (Talauma spongocarpa King), *Kadsura heteroclita* (Uvaria heteroclita Roxb.), *Desmos dubius* (Unona dubia Craib), *D. dumosus* Safford var. *glabrior*, *Oxymitra desmoides* (Goniotalamus desmoides Craib), *Miliusa mollis* Pierre var. *sparsior*, *Dactylicapnos scandens* Hutchinson var. *siamensis*, *Rinorea Curtisii* (Alsodeia Curtisii Ridl.), *R. dasycaula* (A. dasycaula Miq.), *R. heteroclita* (Vareca heteroclita Roxb.), *R. immersa* (Alsodeia immersa Craib), *R. lankawiensis* (A. lankawiensis Ridl.), *R. longiracemosa* (A. longiracemosa Kurz), *R. Murtonii* (A. Murtonii Craib), *R. pachycarpa* (A. pachycarpa King), *R. Scortechinii* (A. Scortechinii King), *R. Smithiae* (A. Smithiae Craib), *Hydnocarpus Kurzii* Warbg. var. *conica*, *Xanthophyllum affine* Korth. var. *puberulum*, *Hypericum Garrettii* Craib var. *ovatum*, *Ochrocarpus Harmandii* Pierre var. *brevipes*, *Eurya japonica* Thunb. var. *siamensis*, *Saurauja nudiflora* DC. var. *angustifolia*, *Camellia connata* (Thea connata Craib), *Dipterocarpus tuberculatus* Roxb. var. *grandifolius*, *Colona auriculata* (Diplophractum auriculatum Desf.), *C. Curtisii* (Columbia Curtisii Ridl.), *C. diptera* (Columbia diptera Ridl.), *C. flagrocarpa* var. *siamica* (Columbia flagrocarpa C. B. Clarke var. *siamica* Craib), *C. floribunda* (Columbia floribunda Kurz), and *C. Winitii* (Columbia Winitii Craib).—J. M. Greenman.

9539. DRUCE, G. CLARIDGE. Mrs. Delany and Bucks plants. Rept. Bot. Soc. and Exchange Club British Isles. 1924: 691. 1925.—“These figures thus prepared by Mrs. Delany at Bulstrode (Buckinghamshire) might rank as the first evidence of their occurrence in the county, as they were executed from 1773-83. . . . Altogether she prepared 10 volumes with about 100 plants in each. . . .” The plant species figured by Mrs. Delany at Bulstrode are listed, with dates.—Frederick V. Rand.

9540. DURAND, HERBERT. Wild flowers and ferns: in their homes and in our gardens. xxix + 380 p., 163 illus. G. P. Putnam's Sons: New York and London, 1925.—A book written in simple language, the common names of the flowers being given with the scientific names. General directions are given as to wild flower gardening, with special references to soils and their treatments. Lists of trees, shrubs, flowers, and ferns, some of them illustrated, which can be used for naturalistic landscape work and wild gardening are given. One chapter is devoted to the protection of native plants, giving rules to be observed in picking and pulling up wild flowers.—Martha L. Beardsley.

9541. FEDTSCHENKO, B. A. Flora of Asiatic Russia. [Фелченко, Б. А. Флора азиатской России.] Roy. 970 p., 51 pl., 249 fig., 10 maps. St. Petersburg [Leningrad], 1912-20.—The first volume of this flora is a series of papers issued in 15 parts on the various families and orders by different authors, as follows: Typhaceae, B. A. FEDTSCHENKO; Sparganiaceae, W. A. ROTHERT; Gramineae, R. J. ROSHEVITZ; Liliaceae (genus *Eremurus*), O. A. FEDTSCHENKO; Andreaeales, V. F. BROTHERUS; Sapindales, A. N. KRIZTOFOVICZ; Saxifragaceae, V. L. NEKRASSOVA; Violaceae, W. BECKER; Umbelliferae, B. M. KOZO-POLJANSKY; Ericaceae, I. W. KUSNEZOW; Bryales, V. F. BROTHERUS; Elatinaceae, C. C. KOSSINSKY. Papers which are to follow are: Caryophyllaceae, G. A. PREODRAJENSKY; Lichenes, A. A. ELENKIN and V. P. SAVICZ; Dipsacaceae, A. A. GROSSGEIM, which are in press. The following new genus, species, subspecies, varieties and combinations are described in the following order in the series: *Sparganium japonicum* Rothert; *Andreaea amurensis* Broth.; *Rhabdoweisia Kusenevae* Broth.; *Acer Fedtschenkoanum* Kriz.; *Viola mirabilis* L. var. *glaberimma* W. Bckr.; *V. Fedtschenkoana* W. Bckr.; *V. Riviniana* Rchb. subsp. *margelanensis* W. Bckr.; *V. acuminata* Ledeb. subsp. *austro-ussuriensis* W. Bckr. and var. *dentata* W. Bckr.; *V. amurica* W. Bckr.; *V. Selkirkii* Pursh. var. *subglabra*; *V. pinnata* L. subsp. *europaea* W. Bckr.; subsp. *sibirica* W. Bckr.; var. *lobata* W. Bckr.; subsp. *dissecta* (*V. dissecta* Ledeb.) W. Bckr.; subsp. *chaerophylloides* W. Bckr.; *V. Kuznezowiana* W. Bckr.; *V. orientalis* (*V. uniflora* var. *orientalis* Maxim.) W. Bckr.; *V. alpestris* (DC.) W. Bckr. subsp. *elegans* (Bunge) W. Bckr.; *V. acutifolia* (*V. biflora* var. *acutifolia*

Kar. & Kir.) W. Bckr.; *Parnassia bifolia* Nekrassova; *Aristida pennata* Trin. var. *rigida* Roshev.; *Stipa subsessiliflora* (*Lasiagrostis subsessiliflora* Rupr.) Roshev.; *S. mongholica* Turcz. var. *barbellata* W. Bckr.; *S. barbata* Desf. var. *incana* W. Bckr. and var. *dasyphylla* W. Bckr.; *S. lingua* Junge var. *minor* W. Bckr.; *S. tianschanica* Roshev.; *S. gracilis* Roshev.; *S. Lipskyi* Roshev.; *S. Korshinskyi* Roshev.; *S. capillata* L. var. *desertorum* Roshev. and var. *coronata* Roshev.; *S. pseudocapillata* Roshev.; *Timouria* n. gen. of Gramineae, *T. Saposhnikowii* Roshev.; *Mollendoa seravshchanica* Broth. & Györfi.; *Oenanthe decumbens* (Thunb.) K.-Pol. var. *communis* K.-Pol. and var. *laciniata* (*O. laciniata* Zoll.) K.-Pol.; *O. aquatica* (L.) Poir. var. *quotidiana* K.-Pol. and var. *gracillima* K.-Pol.; *O. Fedtschenkoana* K.-Pol.; *Cicuta virosa* L. var. *classica* K.-Pol.; *Stenocoelium villosum* (F. & Mey.) K.-Pol. var. *classicum* K.-Pol.; *Johrenia seseloides* (Hoffm.) K.-Pol. var. *legitimum* K.-Pol. and var. *simplificatum* K.-Pol.; *Priornitis Falcaria* (L.) Dumort. var. *archaica* K.-Pol., var. *trivialis* K.-Pol., and var. *glaphyrophylla* K.-Pol.; *Chaerophyllum Prescottii* DC. var. *legitimum* K.-Pol. and var. *cenolophioides* K.-Pol.; *Golenkinianthe gilanica* (*Scandix gilanica* Gmel.) K.-Pol.; *Washingtonia Claytonii* (Mchx.) Britt. subsp. *orientalis* K.-Pol.; subsp. *occidentalis* K.-Pol.; var. *polytricha* K.-Pol.; var. *elleimatricha* K.-Pol.; var. *calyssophora* K.-Pol.; var. *apocalyssa* K.-Pol.; *W. laxa* (*Osmorhiza laxa* Royle) K.-Pol.; *Scandix Pecten* L. var. *glabrescens* K.-Pol.; var. *pilosulum* K.-Pol.; *Anidrum insigne* (*Schrenkia insignis* Lipsky) K.-Pol.; *A. vaginatum* (Ledeb.) K.-Pol. var. *vulgatum* (*Schrenkia vaginata* Rgl.) K.-Pol.; var. *pungens* (*Schrenkia pungens* Rgl. & Schmlh.) K.-Pol.; *Anthriscus leptophylla* (L.) K.-Pol. var. *classica* K.-Pol.; var. *Stocksiana* (*Caucalis Stocksiana* Boiss.) K.-Pol.; *A. trichosperma* (*Chaerophyllum trichospermum* Schult.) K.-Pol.; *A. nemorosa* (*Anthriscus nemorosa* M. B.) K.-Pol.; var. *vulgaris* K.-Pol.; var. *glacialis* (*Anthriscus glacialis* Lipsky) K.-Pol.; *Orlaya grandiflora* (L.) Hoffm. var. *dolichopetala* (K.-Pol.).—*R. E. Woodson, Jr.*

9542. GREEN, M. L. Standard-species of the Linnean genera of Tetradymania. Kew Bull. 1925: 49–58. 1925.—“The standard-species is normally, but not invariably, the so-called type-species.” The following genera are considered: *Myagrum*, *Vella*, *Anastatica*, *Draba*, *Lepidium*, *Thlaspi*, *Cochlearia*, *Iberis*, *Alyssum*, *Clypeola*, *Biscutella*, *Lunaria*, *Dentaria*, *Cardamine*, *Sisymbrium*, *Erysimum*, *Cheiranthus*, *Hesperis*, *Arabis*, *Turritis*, *Brassica*, *Sinapis*, *Raphanus*, *Bunias*, *Isatis*, *Crambe*, *Cleome*, *Peltaria*, *Ricotia*, and *Heliophila*.—*T. J. Fitzpatrick.*

9543. HAYEK, A. Prodrum Florae peninsulae Balcanicae. Repert. Spec. Nov. Regni Veg. Beihefte 30: 1–352. 1 map. 1924; 353–672. 1925.—Four parts of this work have appeared thus far; these embrace the ferns and fern-allies, gymnosperms and angiosperms up to and including a part of the genus *Potentilla*. Ample keys are provided to the various categories of classification. A limited bibliography, synonymy, brief statement of habitat and geographical distribution accompany the concise specific descriptions.—*J. M. Greenman.*

9544. HOSSEUS, CARLOS CURT. Flora Argentina:—estudios comparativos sobre la vegetación de las provincias de La Rioja y de San Juan. [Comparative studies on the vegetation of the provinces of La Rioja and San Juan.] Bol. Acad. Nac. Cienc. Córdoba [Argentina] 26: 5–160. 28 fig. 1921.—This is the first part of a summary of the vascular plants growing in the provinces of La Rioja and San Juan, Argentina. In a preliminary discussion are traced the itineraries of the scientific travelers who have visited these provinces: for La Rioja, J. Hieronymus and J. Niederlein, Luis Brackebusch, G. Bodenbender, H. Kurth, F. Kurtz, and C. C. Hosseus; for San Juan, Saile Echegaray, F. Kurtz, G. Bodenbender and C. C. Hosseus. The systematic summary considers these provinces together, and is in the form of a detailed catalogue in which under each species are given bibliographic references, distribution, full record of specimens seen from San Juan and La Rioja, and often elaborate notes about these and related species of Argentina. The specimens cited are nearly all preserved in the museum of the Universidad Nacional at Córdoba. This first paper embraces the Pteridophyta, and, following the sequence of Engler's Syllabus, the Dicotyledoneae from Piperaceae to Leguminosae. *Berberis argentinensis* is proposed as a new name for *B. spinulosa* Griseb., not St. Hil.; and *Hexaptera kurtzii* as a new species, with citation of specimen but promise of a description later.—*F. W. Pennell.*

9545. JEPSON, W. L. A manual of the flowering plants of California. 1238 p., 1023 fig, 1

map. Associated Students Store, University of California: Berkeley, California. 1925.—A manual covering the botanical province of California, which describes 4019 species of Pteridophyta and Spermatophyta; of these species, 3727 are native and 292 alien immigrants; of the native species, 1416 are endemic. The book contains complete keys; and is profusely illustrated with original drawings. The following new genera and new species are described: *Congdonia* n. gen. of the Crassulaceae, *C. pinetora* (*Sedum pinetorum* Brandg.), *Lewisia yosemitana*, *Streptanthus insignis*, *Dentaria corymbosa*, *Arabis cognata*, *Astragalus deserticolus*, *A. kernensis*, *A. agninus*, *A. clarianus*, *Euphorbia eremica*, *Sidalcea rhizomata*, *Sphaeralcea pulchella*, *S. eremicola*, *S. Bakeri*, *Ayenia californica*, *Clarkia modesta*, *Gonolobus californicus*, *Convolvulus chartaceus*, *Polemonium chartaceum*, *Hugelia eremica*, *Gymnosteris minuscula*, *Phacelia corymbosa*, *P. eremica*, *Trichostema simulatum*, *Salvia eremostachya*, *Acanthomintha obovata*, *Castilleja neglecta* Zeile n. sp., *Orthocarpus rubicundulus*, *Nemacladus glanduliferus*, *Grindelia venulosa*, *Chrysopsis shastensis*, *Erigeron algidus*, *Hemizonia Minthornii*. Two new names are given: *Oenothera micrantha* Hornem. var. *Abramsii* (*Sphaerostigma pallidum* Abrams.) and *Baeria macrantha* Gray var. *littoralis* (*Burrielia chrysostoma* var. *macrantha* Gray). In addition, some 140 new varieties are described and over 500 new combinations are made.—*Mildred E. Mathias*.

9546. LONG, BAYARD. Some changes in the aspect of the list of the Philadelphia flora. *Bartonia* 8: 12-32. 1924.—During the 10 years from 1915, the date of publication of the last flora covering the largest part of the Philadelphia flora (southern New Jersey, southeastern Pennsylvania, adjacent Delaware and Maryland), to 1924, inclusive, much critical study has been given to plants of the eastern U. S. A. Of the changes of names that have been made, 77 have been selected as being most cogent, with reasons why they should be adopted. (The paper should be considered as supplemental to our current floras.)—*F. W. Pennell*.

9547. MOLFINO, JOSÉ F. Notas botánicas. [Botanical notes.] III. *Physis* 7: 163-183. 1924.—These notes comprise 100 more records of plants from northern and northwestern Argentina, compiled from various indicated sources. Specimens seen are cited with locality, collector and date.—*F. W. Pennell*.

9548. SANDWITH, N. Y. Humboldt and Bonpland's itinerary in Venezuela. *Kew Bull.* 1925: 295-310. 1925.—A general account of the exploration is given, and this is followed by an itinerary and an index to all the localities where collections were made. As this was the first botanical exploration of the Orinoco region the identification of the localities where specimens were collected becomes important, as many were new species.—*T. J. Fitzpatrick*.

9549. SĂVULESCU, T., UND T. RAYSS. Materiale pentru Flora Basarabiei. [Materials for the flora of Bessarabia.] *Buletinul Agric.* 4: (Supliment): 1-80. 1 pl., 10 fig. 1924.—The author presents a list of plants with habitat notes, which includes the Pteridophytes, Gymnosperms and Monocotyledons of Bessarabia (Rumania) and which is to be followed later by a phytogeographical work. We find here for the first time brought together the flora of this Province, including varieties and forms. The following new plants are described: *Agropyrum bessarabicum* Săvul et Rayass, *Carex distans* L. var. *bessarabica* Săvul et Rayass, *Eragrostis minor* Horst var. *setifolia* Săvul. et Rayass, *Poa nemoralis* L. var. *tenella* Rchb. f. *glabra* Săvul. et Rayass, and *Agropyrum repens* (L.) P. B. mon. *compositum* Săvul et Rayass.—Furthermore, there are 46 species listed as new for Bessarabia.—*Emil Pop* (transl.).

9550. SCHINZ, HANS, UND ALBERT THELLUNG. Weitere Beiträge zur Nomenklatur der Schweizerflora (VIII). [Further contributions to the nomenclature of the Swiss flora.] *Vierteljahrsschr. Naturforsch. Ges. Zürich.* 68: 457-476. 1923.

9551. SPEGAZZINI, CARLOS. Plantas nuevas o interesantes. [Plants new or interesting.] *Anal. Soc. Cient. Argentina* 92: 77-123. 9 fig. 1921.—Notes of occurrence of plants in Argentina are given and detailed descriptions of the following: (Pteridophyta) *Pilularia mandoni* A. Br.; (Monocotyledoneae) *Herreria montevidensis* Klotzsch and *Scleropoa rigida* (Kunth) Griseb.; (Dicotyledoneae) *Abutilon johnsoni* Ekman, *Artemisia annua* L., *Atriplex platensis* Speg. n. sp., *Chiovendea hypoleuca* Speg., *Cordia ulmifolia* Juss., *Cuscuta epilinum* Weihe, *C. epithymum vulgare* Englem., *Draba australis* Hook. f., *Echinocactus famatimensis* Speg. n. sp., *Elatine minima* F. & M., *Erigeron monorchis* Griseb., *Odontocarya tamoides* Miers, *Pamphalea bupleurifolia* Less., *Portulaca amilis* Speg. n. sp., *P. cryptopetala* Speg., *P. rosae* Speg. n. sp.,

P. simpliciuscula Mart., *Rumex bonariensis* Campd., *Sagina chilensis* Gay, *Salvia aethiopis* L., *S. grahami* Benth., *Talinum paraguayense* Speg. n. sp., *T. racemosum* (L.) Rohrb., *Tamarindus indica* L., *Torresea cearensis* Fr. Allem. (with emended description of *Torresea* Fr. Allem.), and *Wilbrandia villosa* Cogn.—F. W. Pennell.

9552. SPEGAZZINI, CARLOS. *Relacion de un paseo hasta el Cabo de Hoorn*. [Account of a trip as far as Cape Horn.] Bol. Acad. Nac. Cienc. Argentina 27: 321-404. 1924.—In January (1923) the author made a journey from Buenos Aires to Cape Horn and return, collecting at 10 stations, each of which is described. Over 40 years before he had visited the Straits of Magellan, and during the intervening years he notes (1) the total disappearance of the old indigenous population, (2) the more or less total disappearance of the fauna, (3) the marked modification of the flora, by fire or other causes. Among the species collected the following are described as new: (Spermatophyta) *Hieracium antarctica* D'Urv. f. *fuegiensis*, and *Triglochin monanthos*; (Pteridophyta) *Botrychium lunaria* (L.) Sw. var. *antarctica*; (Fungi) *Aecidium subantarcticum* ("a"), *A. ushuwaiense* ("is"), *Ascomyces fuegina*, *Belonium subantarcticum* ("a"), *Camarosporium magellanicum* ("a"), *Cladosporium ushuwaiense* ("is"), *Coniothyrium berberidiphilum* ("a"), *Dictyothyriella* (n. gen.) *alacalluform*, *Dictyothyrium perpusillum* ("a"), *Fomes livescens*, *Karschia fuegina*, *Leptopeltina* (n. gen.) *antarctica*, *Leptosphaeria berberidicola*, *Leptostromella megellanica*, *Leptothyrium ushuwaiense* ("is"), *Linospora antarctica*, *L. magellanica*, *Metasphaerella* (n. gen.) *subantarctica*, *Metasphaeria filicicola*, *M. magellanica*, *Mollisia magellanica*, *Niptera fuegina*, *Patellea nephromatis*, *Phoma enargeae*, *P. subantarctica*, *P. symphyostemi*, *P. tapeiniae*, *Phomatospira magellanica*, *Phyllachora antarctica*, *Pleospora carphicola*, *P. lapatiensis*, *Puccinia hieraciiphila*, *P. luzulicola*, *P. vahli*, *Pyrenophora freticola*, *P. subantarctica*, *P. ushuwaiensis*, *Rhabdospora fuchsicola*, *Septoria magellanica*, *Septomyxa graminicola*, *Sphaerella beaglensis*, *S. carphae*, *S. fuchsicola*, *S. magellanica*, *S. sisyrinchiiicola*, *S. subantarctica*, *S. symphyostemi*, *S. tetroncii*, *Sphaerulina fuegiana*, *Staganospora antarctica*, *Uromyces armericola*, *U. geraniicola*, *U. sisyrinchiiicola*, and *U. ushuwaiensis*.—F. W. Pennell.

9553. SPRAGUE, T. A. *Additions to the Index Kewensis: V*. Kew Bull. 1925: 186-188. 1925.—A list is given of species selected from *Classis Cruciformium* by Crantz, published in 1769.—T. J. Fitzpatrick.

9554. SPRAGUE, T. A. *Additions to the Index Kewensis: V*. Kew Bull. 1925: 311-315. 1925.—The author gives the dates of publication of G. Don's General System, 4 vols., 1831-1837. This is followed by a list of nomina nuda published in Wallich's Catalogue and Roxburgh's Hortus Bengalensis and validated by description in Don's General System. There is also a list of new species published and new combinations proposed in Don's General System.—T. J. Fitzpatrick.

9555. SPRAGUE, T. A. *Additions to the Index Kewensis*. Kew Bull. 1925: 344-345. 1925.—Numerous species were described by Barbosa Rodrigues in Vellozia, Contribuições do Museo Botanico do Amazonas [Contributions from the botanical museum of Amazon], published in 1888, with a 2nd edition in 1891. The species and genera of both editions are listed.—T. J. Fitzpatrick.

9556. SPRAGUE, T. A. *Proposed new nomina conservanda: I*. Kew Bull. 1925: 343-344. 1925.—The genera considered are *Muehlenbeckia*, *Denhamia*, *Oreomyrrhis*, *Leucopogon*, *Olearia*, and *Angianthus*.—T. J. Fitzpatrick.

9557. SPRAGUE, T. A. *Wallich's Catalogue and G. Don's General System*. Kew Bull. 1925: 159. 1925.—Names in Wallich's Catalogue were without descriptions. Many were validated by descriptions by Don in his General System (1831-1837) and by other writers. A list is being prepared for inclusion in 7th supplement of the Index Kewensis.—T. J. Fitzpatrick.

9558. THISELTON-DYER, W. T. *Flora Capensis*. Kew Bull. 1925: 42-43. 1925.—Announcement is made of the completion of the work mentioned in the title.—T. J. Fitzpatrick.

9559. THISELTON-DYER, W. T. *Flora capensis*. Kew Bull. 1925: 289-293. 1925.—The author gives a history of the preparation and publication of this important and fundamental work in which 2016 new species are described.—T. J. Fitzpatrick.

9560. URBAN, IGN. *Plumiers Leben und Schriften nebst einem Schlüssel zu seinen*

Blütenpflanzen. [Plumiers' life and writings, together with a key to his flowering plants.] Repert. Spec. Nov. Regni Veg. Beihefte 5: 1-196. 1920.

PTERIDOPHYTES

9561. BRAUSE, G. Einige neue Samoa-Farne. [A few new Samoan ferns.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 138-141. 1922.—Four new species and one new variety of ferns collected by F. Vaupel on Samoa in 1905 are described: *Alsophila decurrens vaupelii*, *Dryopteris mataanae*, *Polypodium lepidum*, *P. vaupelii*, and *Trichomanes vaupelii*.—F. W. Pennell.

9562. BRAUSE, G. Filices novae domingenses. [New ferns of Santo Domingo.] Repert. Spec. Nov. Regni Veg. 18: 245-247. 1922.—The following new species are described: *Lindsaya Abbottii*, *Diplazium Leonardi*, *D. Urbani*, *Asplenium Abbottii*, and *A. Samanae*.—J. M. Greenman.

9563. CHRISTENSEN, CARL. Revised list of Hawaiian Pteridophyta. Bernice P. Bishop Museum Bull. 25. 3-30. 1925.

9564. KENDALL, MARY LOUISE. A study of variation in *Polypodium californicum* Kaulf. Amer. Fern Jour. 13: 75-87. 1923.—This fern is found to be extremely variable and 2 distinct varieties occur, differing in texture of leaf.—E. R. Walker.

9565. LOUIS-MARIE. Les Lycopodiniées du Québec. [Lycopods of Quebec.] Nat. Canadien 52: 2-5. 1925.—This is a review of Marie-Victorin's treatise on the Lycopods of the Province of Quebec.—A. H. MacKay.

9566. MÄCKEL, H. G. Zur Kenntnis der späteren Entwicklungsstadien der Prothallien von *Equisetum arvense*. [Contribution to the knowledge of the later stages of development of the prothallium of *Equisetum arvense*.] Repert. Spec. Nov. Regni Veg. Beihefte 28: 1-36. 1 pl., 28 fig. 1924.

9567. MAXON, WILLIAM R. Notes on American Ferns XIX. Amer. Fern Jour. 13: 73-75. 1923.—Notes on *Polypodium thyssanolepis* A. B., *Selaginella standleyi* Maxon, *Selaginella watsoni* Underw., and *S. lepidophylla*.—E. R. Walker.

9568. PALMER, T. CHALKLEY. [Rev. of: PFEIFFER, DR. NORMA. Monograph of the Isoetaceae. Annals Missouri Bot. Gar. 92: (1922).] Amer. Fern Jour. 13: 9-92. 1923.

9569. ROSENSTOCK, E. Filices novae a Cl. A. C. Brade in Brasilia collectae. Repert. Spec. Nov. Regni Veg. 21: 343-349. 1925.—The following new species, variety, and hybrid are described from Brazil: *Gleichenia paulistana*; *G. paulistana* Rosenst. var. *pseudopubescentis*; *Hemitelia Mazonii*; *Trichomanes anadromum*; *T. Sellowianum* Pr. var. *decrescens*; *Adiantum fovearum* Raddi var. *major*; *Dryopteris patula* Fée var. *latisinuata*; *D. hybrida* Brade & Rosenst. (*D. hastata* Raddi \times *D. patula* Fée var. *latisinuata* Rosenst.); *Aseplenium Bradei*; *Stigmatopteris Bradei*; *S. heterocarpa* (Fée) var. *basilaris*; *Polypodium saizicola*; *P. vacciniifolium* L. & F. f. *inciso-fimbriata*; *P. menisciifolium* L. & F. var. *pubescens*; *Elaphoglossum Wettsteinii* Christ. var. *palustre*; and *Polybotrya osmundacea* H. B. W. var. *crispopaleacea*.—R. E. Woodson, Jr.

9570. ROSENSTOCK, E. Neue Arten und Abarten brasilianischer Pteridophyten. [New species and varieties of Brazilian pteridophytes.] Repert. Spec. Nov. Regni Veg. 20: 89-95. 1924.—The following new species and varieties are described from Brazil: *Hymenophyllum breve*; *Trichomanes eximium* Kze. var. *crispulum*; *T. pyxidiferum* L. var. *organense*; *Alsophila paleolata* Mart. var. *villosa*; *Cyathea bahiensis*; *C. micromera*; *Adiantopsis Luetzelburgii*; *Cheilanthes flexuosa* Kze. var. *major*; *Dryopteris organensis*; *Elaphoglossum baktense*; *E. Lisboae*; *E. strictum* (Raddi) var. *discolor*; *Leptochilus serratifolius* (Mert.) C. Chr. var. *prolifer*; *Lindsaya gnianensis* Dry. var. *filipendula*; *Polypodium brevistipes* Mett. var. *subintegrum*; *P. Luetzelburgii*; *Pteris quadriaurita* Retz var. *fluminensis*; *Gleichenia flexuosa* (Schrad.) Mett. f. *Zuccarini*; *Aneimia Luetzelburgii*; *A. organensis*, and *Lycopodium Luetzelburgii*.—R. E. Woodson, Jr.

9571. SCHAFFNER, JOHN H. How to distinguish the North American Species of *Equisetum*. Amer. Fern Jour. 13: 67-72. 1923.—Key to the species, varieties, and hybrids of *Equisetum* in North America, north of Mexico, and list of North American species.—E. R. Walker.

9572. SCHMIDT, O. CHR. Einige neue Selaginellen aus Westindien und Tahiti. [Some

new Selaginellas from West Indies and Tahiti.] Repert. Spec. Nov. Regni Veg. 20: 155-158. 1924.—The following new species are described: *Selaginella Leonardi*, Haiti; *S. Bracei* Hieron. Bahamas; and *S. Setchelli*, Tahiti.—*R. E. Woodson, Jr.*

9573. W., E. J. [Rev. of: TILTON, GEORGE HENRY. The fern lover's companion. 240 p. 159 fig. Little, Brown & Co.: Boston.] Amer. Fern Jour. 13: 60-61. 1923.

SPERMATOPHYTES

9574. ANONYMOUS. A new species of *Nepenthes* from Borneo. Kew Bull. 1925: 35-37. 1925.—A description is given of the new species *Nepenthes decurrens* Macfarlane from Barram province, Sarawak, Borneo.—*T. J. Fitzpatrick.*

9575. ANONYMOUS. Decades Kewenses. Decas CXI. Kew Bull. 1925: 279-285. 1925.—The new species by S. T. DUNN are *Ranunculus Munroanus* J. R. Drumm, western Tibet, Kashmir; and *R. palifolius*, Kashmir. Those by H. N. RIDLEY are *Shorea mecistopteryx*, Borneo; *Gomphia oblongifolia*, Malay Peninsula. Those by F. KRAENZLIN are *Eremophila foliosissima*, western Australia; *E. abietina*, western Australia; and *E. exotrachys*, western Australia. C. H. WRIGHT describes *Crinum Forgetii* from Peru; OSMASTON describes *Smilax erecta*, India; and C. V. B. MARQUAND describes *Ophiurus Pollockii*, Australia.—*T. J. Fitzpatrick.*

9576. ANONYMOUS. Decades Kewenses. Decas CXII. Kew Bull. 1925: 329-333. 1925.—The following new species are described by J. S. GAMBLE: *Viscum mysorense*, *Phyllanthus Narayanswamii*, *Pseudoglochidion* n. gen. of Euphorbiaceae, *P. anamalayanum*, *Glochidion Bourdillonii*, *Emblia Fischeri*, *Reidia Beddomei*, *R. Gageana*, *R. megacarpa*, and *R. stipulacea*, all from southern India. The species by C. E. C. FISCHER is *Ficus Angladei*, southern India.—*T. J. Fitzpatrick.*

9577. ANONYMOUS. Decades Kewenses. Decas CXIII. Kew Bull. 1925: 426-433. 6 fig. 1925.—The new species by T. A. SPRAGUE are *Frankenia connata*, southern Australia; *F. flabellata*, southern Australia; and *F. serpyllifolia* Lindl., amplified, Queensland. Those by C. E. C. FISCHER are *Elaeocarpus quadratus*, Burma; and *Caralluma stalagmifera*, Vandalur, southern India. Those by R. N. PARKER are *Plectronia tavoyana*, Burma; and *Lasianthus longipedunculatus*, Burma. Those by C. E. HUBBARD are *Stipa Blackii*, Australia; and *S. fusca*, southern Australia. O. STAPF describes *Hedychium sino-aureum*, China.—*T. J. Fitzpatrick.*

9578. ANONYMOUS. Diagnoses africanæ: LXXIX. Kew Bull. 1925: 361-365. 1925.—The new species by J. HUTCHINSON and V. S. SUMMERHAYES are *Clematopsis lineariloba* and *C. simplicifolia*, Tanganyika Territory. Those by A. H. G. ALSTON are *Cissampelos insignis*, Tanganyika Territory, *Erlangea Mooreana*, Tanganyika Territory, *Psednotricha australis*, Cape Province, *Calostephane setosa*, Rhodesia, and *Geigeria elongata*, Transvaal. S. T. PHILLIPS describes *Phylicia Thodei*, Natal; and S. M. STENT, *Tricholaena melinioides*, South Rhodesia. *Osmitopsis parvifolia* Hofmeyr. is given as a new combination for *Osmites parvifolia* DC.—*T. J. Fitzpatrick.*

9579. APT, F. W. Beiträge zur Kenntnis der mittelamerikanischen Smilaceen und Sarsaparilldrogen. II. [Contributions to the knowledge of the Central American Smilaceae and sarsaparilla drugs. II.] Repert. Spec. Nov. Regni Veg. 18: 385-422. 1922.—A general review of the subject precedes a key to 38 species of Central American *Smilax*. These are described in detail and the following new species and combinations are included: *Smilax Pavoniana* (*S. mollis* β *Pavoniana* A. DC.), *S. gymnopoda*, *S. Ramonensis*, *S. canaliculata*, *S. Engleriana*, *S. Schaffneriana* (*S. moranensis* β *Schaffneriana* A. DC.), *S. Kerberi*, *S. Tonduzii*, *S. vanilliodora*, *S. Gilgiana*, and *S. Bernhardtii*.—*J. M. Greenman.*

9580. BABCOCK, E. B., AND MARGARET MANN. Chromosome number and individuality as indicative of the taxonomic relationships, with special reference to the genus *Crepis*. Proc. Pan-Pacific Sci. Congr., Australia, 1923, 1st: 328. 1924.

9581. BEAUVERD, GUSTAVE. Documents systématiques relatifs à la connaissance phylogénétique des genres *Pulsatilla* et *Erythronium*. [Systematic notes on the phylogeny of the genera *Pulsatilla* and *Erythronium*.] Verh. Naturf. Ges. Basel. 35: 203-227. 2 fig. 1923.

9582. BECKER, WILH. Beiträge zur Kenntnis der südamerikanischen Violæ. [Contri-

butions to knowledge of the South American violas.] *Repert. Spec. Nov. Regni Veg.* 21: 349-361. 1925.—A list is compiled of known violas of South America, and the following descriptions of new species are included: *Viola Spegazzinii*, Argentina; *V. Skottsbergiana*, Chile; *V. santiagonensis*, Chile; *V. petraea*, Patagonia; *V. cyathiformis*, Chile; *V. patagonica*, Patagonia; *V. auritella*, Patagonia; *V. triflabellata*, Argentina; *V. pseudo-vulcanica*, Patagonia; *V. Friderici*, Chile; *V. cano-barbata* Leyb. var. *albiflora*; and *V. maculata* Cav. f. *calliantha* Speg.—*R. E. Woodson, Jr.*

9583. BECKER, WILH. *Viola huanucoënsis* W. Bckr. und *Viola truncata* Meyen. *Repert. Spec. Nov. Regni Veg.* 18: 186-187. 1922.—The following new name and new varieties are proposed: *Viola huanucoënsis* (*V. truncata* Bckr., not Meyen); *V. truncata* Meyen vars. *glandulifera* and *glaberrima*, both from Chile.—*J. M. Greenman.*

9584. BECKER, WILH. *Viola kiangsienensis* sp. nov. [China]. *Repert. Spec. Nov. Regni Veg.* 21: 321. 1925.

9585. BECKER, W. *Viola Krugiana* spec. nov. [Japan]. *Repert. Spec. Nov. Regni Veg.* 21: 261. 1925.

9586. BECKER, WILH. *Violae Mexicanae Pringleanae novae*. *Repert. Spec. Nov. Regni Veg.* 18: 125. 1922.—*Viola nuevo-leonensis* and *V. jalapaënsis* are described as new species from Mexico.—*J. M. Greenman.*

9587. BECKER, WILHELM. *Violae novae Americae meridionalis*. *Repert. Spec. Nov. Regni Veg.* 18: 180-186. 1922.—The following new species are described: *Viola Kalbreyeri*, Colombia; *V. ecuadorensis*, Ecuador; *V. pallascaensis*, Peru; *V. Araucaniae*, Chile; *V. Evae Hieron.*, Argentina; *V. rugosa*, A. Philippi, Chile; *V. lanifera*, Chile; *V. curicoensis*, Chile; *V. acanthophylla* Leyb. var. *tontalensis*, Argentina; *V. argentina*, Argentina; *V. Niederleinii*, Argentina; *V. Hieronymi*, Argentina; *V. tenuis* Bckr. var. *geralensis*, Brazil; and *V. Uleana*, Brazil.—*J. M. Greenman.*

9588. BECKER, WILH. *Violae novae Asiaticae*. *Repert. Spec. Nov. Regni Veg.* 17: 314-316. 1921.—The following new species are described: *Viola arisanensis*, *V. tienschiensis*, *V. Schneideri*, and *V. taiwanensis*.—*J. M. Greenman.*

9589. BECKER, WILH. *Zwei neue Violae aus Asien*. *Repert. Spec. Nov. Regni Veg.* 21: 236-237. 1925.—The following new species are described: *Viola Rockiana* and *V. Stewardiana*.—*R. E. Woodson, Jr.*

9590. BEILLE, L. *Sur quelques Euphorbiacées nouvelles de la flore Indochinoise*. [New species of Euphorbiaceae from Indo China.] *Bull. Soc. Bot. France* 72: 156-163. 2 fig. 1925.—The following new species are described: *Breyniopsis Pierrei*, Cochinchina; *Phyllanthodendron carinatus*, Annam; *P. lingulatus*, Tonkin; *P. rubicundus*, Annam; *P. Poilanei*, Annam. The author has been able to refer the genus *Phyllanthodendron* of Hensley to *Phyllanthus*. The exact relationship still remains obscure. The genus *Breyniopsis* is very well characterized by the calyx of the staminate flowers. This genus, near to *Glochidion* and especially to *Breynia*, consists up to the present time of only 1 species.—*Henri des Gayels (transl. by E. B. Payson).*

9591. BITTER, GEORG. *Acnistus dolichostylus* Bitt. n. sp. [Peru]. *Repert. Spec. Nov. Regni Veg.* 21: 85-86. 1925.

9592. BITTER, GEORG. *Additamenta ad genus Cyphomandram. I.* *Repert. Spec. Nov. Regni Veg.* 17: 346-355. 1921.—The following new species are described and new combination made: *Cyphomandra hypomalaca*, Ecuador; *C. Kalbreyeri*, Colombia; *C. Ulei*, Brazil; *C. dolichorhachis*, Colombia; *C. tenuisetosa*, Brazil; and *C. diversifolia* (*Solanum diversifolium* Dun).—*J. M. Greenman.*

9593. BITTER, GEORG. *Bidens Purpusorum* Bitt. et Petersen nov. spec. *Repert. Spec. Nov. Regni Veg.* 17: 335-338. 1921.—*Bidens Purpusorum* Bitt. & Petersen is described from specimens collected by J. A. Purpus in the vicinity of Esperanza, Puebla, Mexico.—*J. M. Greenman.*

9594. BITTER, GEORG. *Capsicum guatemalense* Bit. nov. spec. [Guatemala]. *Repert. Spec. Nov. Regni Veg.* 20: 377-378. 1924.

9595. BITTER, GEORG. *Cyphomandra dolichocarpa* nov. spec. *Repert. Spec. Nov. Regni Veg.* 17: 327-328. 1921.—The species mentioned in the title is based on specimens collected by Wercklé at La Hondura, Costa Rica.—*J. M. Greenman.*

9596. BITTER, GEORG. Ein Gattungsbastard zwischen *Acaena* und *Margyricarpus* *Margyracaena*. [A generic hybrid between *Acaena* and *Margyricarpus*: *Margyracaena* Repert. Spec. Nov. Regni Veg. 17: 239-243. 1921.—*Margyracaena* is described as a new generic hybrid from Masatierra. The hybrid is designated as \times *Margyracaena Skottsbergii* and is said to be a cross between *Acaena argentea* R. & P. and *Margyricarpus setosus* R. & P. subsp. *digynus* Bitt.—J. M. Greenman.
9597. BITTER, GEORG. Ein neues *Capsicum* aus der Sektion *Decameris*. [A new *Capsicum* of the section *Decameris*.] Repert. Spec. Nov. Regni Veg. 18: 126-127. 1922.—*Capsicum Eggersii* is described as a new species from Ecuador.—J. M. Greenman.
9598. BITTER, GEORG. Eine verkannte *Hebecladus*-Art und ihre Bedeutung für die Stellung der Gattung in der Tribus der Solaneae. [A mistaken species of *Hebecladus* and its significance for the position of the genus in the tribe Solaneae.] Repert. Spec. Nov. Regni Veg. 17: 246-251. 1921.—The following new combination is made and new variety described: *Hebecladus propinquus* (*Saracha propinqua* Miers) and *H. propinquus* var. *parviflorus* from Peru.—J. M. Greenman.
9599. BITTER, GEORG. Ergänzungen zur Gattung *Acaena*. [Additions to the genus *Acaena*.] Repert. Spec. Nov. Regni Veg. 18: 127-128. 1922.—*Acaena antarctica* Hook f. is reported from southern Chile and *A. glandulifera* Bitt. subsp. *Nordenskjoeldii* is described as a new subspecies from the same region.—J. M. Greenman.
9600. BITTER, GEORG. *Sesseopsis vestioides* [Schlchtdl.] Bitt. nov. comb. Repert. Spec. Nov. Regni Veg. 18: 225-227. 1922.—The new combination mentioned in the title is based on *Cestrum vestioides* Schlchtdl.—J. M. Greenman.
9601. BITTER, GEORG. *Solana nova vel minus cognita*. XX. Repert. Spec. Nov. Regni Veg. 18: 49-71. 1922.—The following species and varieties are described as new: *Solanum deflexiflorum*, Colombia; *S. leptorhachis*, Ecuador; *S. parcebarbatum*, Costa Rica and Panama; *S. parcebarbatum* var. *minorifrons*, Guatemala; *S. calycopogon*, Colombia; *S. anacamptorhachis*, Brazil; *S. copeyanum*, Costa Rica; *S. narcoticosmum*, Guatemala; *S. hypomicropogon*, Peru; *S. tenuilamellosum*, Costa Rica; *S. vernicinitens*, Guatemala; *S. gratum*, Venezuela; *S. incomptum* vars. *longiuspilosum* and *lugens*, Costa Rica; *S. roblense*, Costa Rica; *S. imberbe*, Panama; *S. enchylozum*, Costa Rica; *S. towarensense*, Venezuela; *S. verniciflorum*, Bolivia; *S. daphnophyllum*, Bolivia; *S. longevirgatum*, Colombia; *S. supranitidum*, Brazil; *S. loretoanum*, Peru; *S. hypomalacothrix*, Bolivia.—J. M. Greenman.
9602. BITTER, GEORG. Zur Gattung *Cacabus* Bernh. [The genus *Cacabus* Bernh.] Repert. Spec. Nov. Regni Veg. 17: 243-245. 1921.—*Cacabus pusillus* is described as a new species from Peru. Additional important notes on the genus are recorded.—J. M. Greenman.
9603. BITTER, GEORG. Zur Gattung *Physalis*. I. [The genus *Physalis*.] Repert. Spec. Nov. Regni Veg. 18: 5-7. 1922.—A new combination is formed, namely, *Physalis stapelioides* (*Saracha stapelioides* Regel). To this species is referred also *Physalis acuminata* Greenm.—J. M. Greenman.
9604. BORNMÜLLER, J. *Pedicularis ferdinandi* Bornm. spec. nov. (sect. *Bicuspidatae*) e flora macedonica. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 212-218. 1922.—*Pedicularis ferdinandi*, collected by Bornmüller in Macedonia in 1918, is fully described and its affinities discussed.—F. W. Pennell.
9605. BORNMÜLLER, J. *Stachys inanis* Hausskn. et Bornm., eine neue Art der *Recta*-Gruppe aus Mesopotamien. [A new species of *Stachys* from the *Recta* Group, from Mesopotamia.] Repert. Spec. Nov. Regni Veg. 22: 187-189. 1925. (Repert. Eur. et Med. 1: 811-813. 1925).—A description in Latin of this new species is given.—John E. Dinsmore.
9606. BORNMÜLLER, J., UND O. SCHWARZ. Eine unbeschriebene *Cuscuta* in Thüringen. [An undescribed *Cuscuta* in Thuringia.] Report. Spec. Nov. Regni Veg. Beihefte 26: 56-58. 1 pl. 1924.—*Cuscuta stenoloba* is described as a new species from Thuringia.—J. M. Greenman.
9607. BRAID, K. W. The genus *Brachycorythis*. Kew. Bull. 1925: 353-361. 1925.—The following new species and subspecies are described: *Brachycorythis Macclouniei*, Nyasaland; *B. Hirschbergii*, Belgian Congo; *B. grandis* Krzl. var. *sudanensis*, Sudan; *B. grandis* var. *ugandensis*, Uganda; *B. Schweinfurthii* Rehb. f. var. *nigerica*, and *B. Kalbreyeri* Rehb. f. var. *glandulosa*, Sierra Leone.—T. J. Fitzpatrick.

9608. BRAINERD, EZRA. *Violets of North America*. Vermont Agric. Exp. Sta. Bull. 224. 1-172. 75 fig. (25 col.). Dec., 1921.—The following new combination is included: *Viola purpurea* Kellogg var. *venosa* (*V. Nuttallii* var. *venosa* Watson).—J. M. Greenman.

9609. BRAND, A. *Decas specierum novarum altera*. Repert. Spec. Nov. Regni Veg. 18: 309-314. 1922.—The following new species are described: *Nama Ehrenbergii*, Mexico; *Lappula heliocarpa*, Mexico; *L. costaricensis*, Costa Rica; *L. guatemalensis*, Guatemala; *L. Ratnii*, California; *L. Eckloniana*, South Africa; *Allocarya commixta*, California; *A. fragilis*, Washington; *A. dichotoma*, Oregon; and *A. Jonesii*, California.—J. M. Greenman.

9610. BRAND, A. *Decas specierum novarum quarta*. Repert. Spec. Nov. Regni Veg. 20: 46-50. 1924.—The following new species are described: *Cantua longifolia*, Peru; *Phacelia Hossei*, Argentina; *Plagiobothrys aurantiacus*, Peru; *P. allocaryoides*, California; *Cryptantha candelabrum*, Chile; *C. campylotricha*, Chile; *C. modesta*, Argentina; *C. candolleana*, Chile; *C. Hossei*, Argentina; and *C. piscoensis*, Peru.—R. E. Woodson, Jr.

9611. BRAND, A. *Decas specierum novarum quinta*. Repert. Spec. Nov. Regni. Veg. 20: 317-320. 1924.—The following 10 new species are described fully: *Cryptanthe umbelliformis*, Peru; *C. Seleri*, Peru; *C. Woitschachii*, Peru; *C. Faminiae*, Argentina; *C. Weberbaueri*, Peru; *C. argentinica*, Argentina; *C. cajabambensis*, Peru; *C. Philippiana*, Chile; *Amsinckia nigricans*, California; and *A. Parishii*, California.—R. E. Woodson, Jr.

9612. BRAND, A. *Drei neue Gattungen der Cryptanthae*. [Three new genera of Cryptanthae.] Repert. Spec. Nov. Regni Veg. 21: 249-254. 1925.—“Cryptanthae” is a new name which the author gives that group of *Borraginaceae* hitherto known as “*Eritrichae*.” The 3 new genera with their combinations are as follows: *Johnstonella* n. gen., *J. racemosa* (*Eritrichium racemosum* Watson), and var. *lignosa* (*Cryptanthe racemosa* var. *lignosa* Johnston), California; *J. inaequata* (*Cryptanthe inaequata* Johnston), California; *Pedinogyne* n. gen., *P. tibetica* (*Eritrichium tibeticum* Clarke), and var. *minor* (*Eritrichium tibeticum* var. *minor* Clarke), Thibet; *Echinoglochis* n. gen., *E. hystricula* (*Allocarya hystricula* Piper), California; *E. acanthocarpa* (*A. acanthocarpa* Piper), California; *E. oligochaeta* (*A. oligochaeta* Piper), California; *E. echinacea* (*A. echinacea* Piper), California; *E. Austinae* (*A. Austinae* Piper), California; *E. cristata* (*A. cristata* Piper), California; *E. Eastwoodae* (*A. Eastwoodae* Piper), California; *E. Greenei* (*Echinosperrum Greenei* A. Gray.), Oregon, California.—R. E. Woodson, Jr.

9613. BRAND, A. *Hydrophyllaceae novae et criticae*. Repert. Spec. Nov. Regni Veg. 17: 318-320. 1921.—The following new species are described: *Phacelia violacea*, Washington and Nevada; and *P. adpersa*, Oregon.—J. M. Greenman.

9614. BRAND, A. *Polemoniaceae novae et criticae*. Repert. Spec. Nov. Regni Veg. 17: 316-318. 1921.—The following new species and varieties are described: *Polemonium chinense*, China; *P. decurrens*, Nevada; *Collomia tinctoria* var. *subulata* subvar. *luxuriosa*, California; *C. macrocalyx* Leiberg, eastern Oregon; *Phlox multiflora* A. Nelson var. *intermedia* (*P. intermedia* A. Nelson); *Gilia multiflora* Nutt. var. *glabristyla*, New Mexico; *G. Nuttallii* A. Gray var. *arida* (*G. floribunda* var. *arida* M. E. Jones); and *Gymnosteris Leibergii*, eastern Oregon.—J. M. Greenman.

9615. BROWN, N. E. *New species of Indigofera from the Transvaal and Swaziland*. Kew. Bull. 1925: 142-159. 1925.—The article includes an extended key to the species. The 32 new species are: *Indigofera Junodii*, *I. cognata*, *I. relaxata*, *I. Holubii*, *I. enormis*, *I. rudis*, *I. lydenburgensis*, *I. placida*, *I. ingrata*, *I. crebra*, *I. tristoides*, *I. dissimilis*, *I. compacta*, *I. hybrida*, *I. densa*, *I. commixta*, *I. comosa*, *I. accepta*, *I. Nelsonii*, *I. pongolana*, *I. perplexa*, *I. subincana*, *I. brevifolia*, *I. paucifolia*, *I. obscura*, *I. frondosa*, *I. Masonae*, *I. lepida*, *I. ripae*, *I. amitina*, *I. Galpinii*, and *I. floribunda*. *I. crebra* occurs in Swaziland, all the others in Transvaal.—T. J. Fitzpatrick.

9616. CAMUS, AIMÉE. *Andropogon tsaratananensis* A. Camus, Graminée nouvelle de Madagascar. [Andropogon tsaratananensis A. Camus, a new grass from Madagascar.] Bull. Soc. Bot. France 72: 591-592. 1925.—This note contains the Latin diagnosis of a new grass from Madagascar: *Andropogon tsaratananensis*. The author notes the differences that separate this species from *A. trichozygus* Baker and *A. canaliculatus* Schum.—A. Tronchet (translated by E. B. Payson).

9617. CAMUS, AIMÉE. *Boivinella*, genre nouveau de Graminées. [*Boivinella*, a new genus of the Gramineae.] Bull. Soc. Bot. France 72: 174-177. 2 fig. 1925.—The new genus *Boivinella* is similar to *Paspalidium* Stapf, but it differs definitely in the orientation of the parts of the spikelet as well as in the position and shape of the inferior glume. This genus consists of only a single species which is here described as new: *B. sclerioides* Camus (*Panicum sclerioides* Boivin, in herb. Mus. Paris, Comores, Anjonan). The plant is from western Madagascar, from the neighborhood of Mt. Tsitondroina, in humid forests, collected by Perrier de la Bâthie.—*Henri de Gayets* (transl. by E. B. Payson).

9618. CAMUS, AIMÉE. *Brachiaria* et *Panicum* nouveaux de Madagascar. [New species of *Brachiaria* and *Panicum* from Madagascar.] Bull. Soc. Bot. France 72: 369-372. 1925.—The author describes 1 new species of *Brachiaria* and 4 new species of *Panicum* as follows: *Brachiaria bemarivensis* from central Madagascar; *Panicum andringitrense* from central Madagascar, Massif d'Andringitra; *Panicum amboositrense*, central Madagascar; *P. Perrieri*, water margins on the Massif d'Andringitra; *P. ibitense*, summit of Mt. Ibity; *P. cupressifolium*, Massif d'Andringitra. This species forms an ericoid growth of woody stems on the peat bog, with temporary water supply.—*L. Faucheron* (transl. by E. B. Payson).

9619. CAMUS, AIMÉE. Espèces nouvelles de *Digitaria* malgaches. [New Madagascar species of *Digitaria*.] Bull. Soc. Bot. France 72: 153-154. 1925.—This note contains a description of *Digitaria Perrieri* A. Camus n. sp., which M. Perrier de la Bâthie found on the Massif d'Andringitra, central Madagascar. *D. ankaratrensis* is also described as new; specimens were found by Viguiet near Vavavata, province of Vakinankaratra, district of Betafo. M. Perrier de la Bâthie has seen this plant common in the fields of Ankaratra below 2000 m. altitude.—*Henri des Gayets* (transl. by E. B. Payson).

9620. CAMUS, AIMÉE. *Isachne* Perrieri A. Camus, espèce nouvelle de Madagascar. [*Isachne* Perrieri A. Camus, new species from Madagascar.] Bull. Soc. Bot. France 72: 306. 1925.—The author gives a diagnosis of this new species from central Madagascar, in the environs of Betafo. It is compared to the 2 related species, *I. cochinchinensis* Balansa, and *I. Chevalieri* A. Camus.—*L. Faucheron* (transl. by E. B. Payson).

9621. CAMUS, AIMÉE. Le genre *Cephalostachyum* à Madagascar. [The genus *Cephalostachyum* in Madagascar.] Bull. Soc. Bot. France 72: 84-89. 1925.—Up to this time only a single species, *Cephalostachyum Chapelieri* Munro, was known from Madagascar. After having recalled the principal characters of this genus of Bamboos, the author describes 4 new species from this island. These are as follows: *Cephalostachyum Perrieri*, *C. Viguietii*, *C. Peclardii*, *C. madagascariense*. A key to the species accompanies this note.—*R. Douin* (transl. by E. B. Payson).

9622. CAMUS, AIMÉE. *Panicum Flacourtii* A. Camus, espèce nouvelle de Madagascar. [*Panicum Flacourtii* A. Camus, a new species from Madagascar.] Bull. Soc. Bot. France 72: 449. 1925.—This very distinct species, of which the author gives a Latin description, is dedicated to Flacourt, one of the first explorers of Madagascar. It grows in the center of the island on Mt. Tsaratanana, in a lichen forest.—*L. Faucheron* (transl. by E. B. Payson).

9623. CAMUS, AIMÉE. *Paspalidium* et *Panicum* nouveaux de Madagascar. [New species of *Paspalidium* and *Panicum* from Madagascar.] Bull. Soc. Bot. France 72: 706-708. 1925.—All the species described here have been collected in Madagascar by M. Perrier de la Bâthie. *Paspalidium ankarensense* n. sp. grows in tufaceous places of the rivers and brooks of the plateau of Ankara (western Madagascar). The author notes the ways in which this species differs from *P. flavidum* Camus, and how it is distinguished from *P. Scottii* Camus (*Panicum Scottii* Hackel). *Panicum Danguyi* n. sp. comes from the wet rocks of the Massif de Manongarivo (central Madagascar). *Panicum manongarivense* n. sp. is also from the Massif de Manongarivo. *P. subhystrix* n. sp. is found on the Massif d'Andringitra, central Madagascar. The author discusses the distinguishing characters which serve to separate *P. subhystrix* from *P. hystrix* Steudel and differentiates *P. filicaule* and those species which somewhat resemble *P. hirtum*, an American species.—*Henri des Gayets* (transl. by E. B. Payson).

9624. CAMUS, AIMÉE. *Sacciolepis*, *Panicum*, *Brachiaria* et *Boivinella* nouveaux de Madagascar et des Comores. [New species of *Sacciolepis*, *Panicum*, *Brachiaria* and *Boivinella* from Madagascar and from the Comoro Islands.] Bull. Soc. Bot. France 72: 618-623. 1925.

—Latin diagnoses are given for the following new species from Madagascar: *Sacciolepis Vi-guieri*, *Panicum spergulifolium*, *P. mahafalense*, *P. Humbertii*, *Brachiaria dimorpha*, *B. tsia-fajavonensis*. *Boivinella comorensis* is from the Comoro Islands.—A. Tronchet (transl. by E. B. Payson).

9625. CHERMEZON, H. Diagnoses de Cypéracées nouvelles de Madagascar. [Diag-noses of new Cyperaceae from Madagascar.] Bull. Soc. Bot. France 72: 18-22. 1925.—These are: *Mariscus dunensis*, *M. fallax* H. Cherm. var. *major*, *Pycreus Decaryi*, *P. Mundtii* Nees var. *Perrieri*, *Cyperus ankaizinensis*, *C. chamacephalus* (collected by Afzelius), *Bulbostylis heterostachya*, *Costularia laxa* H. Cherm. var. *macrantha*, *Carex hirtiglumis* C. B. Clarke var. *arcuata*, *C. tsaratananensis*. Except the plant collected by Afzelius all these Cy-peraceae resulted from the explorations of Perrier de la Bâthie and Decary.—J. Beauverie (transl. by E. B. Payson).

9626. CHERMEZON, H. Diagnoses de Cypéracées nouvelles de Madagascar II. [Diag-noses of new Cyperaceae from Madagascar.] Bull. Soc. Bot. France 72: 613-619. 1925.—Latin diagnoses are given of: *Kyllingia planiculmis* C. B. Clarke var. *macronata*, *Mariscus Decaryi* H. Cherm. var. *pauciflorus*, *M. goniobolbus* H. Cherm. var. *angustifolius*, *Pycreus blastophorus*, *Cyperus onivensis*, *C. plantaginifolius* H. Cherm. var. *minor*, *C. molligiumis*, *Fimbristylis mangorensis*, *Bulbostylis Bathiei*, *Costularia Baroni* C. B. Clarke var. *microcarpa*, and *Carex gonochorica*. These new species and varieties have been mostly described from collections made in 1924 and 1925 by Perrier de la Bâthie.—A. Tronchet (transl. by E. B. Payson).

9627. CHERMEZON, H. Observations sur quelques Cypéracées de Madagascar. [Obser-vations on some Cyperaceae of Madagascar.] Bull. Soc. Bot. France 72: 169-174. 1925.—The author emends and rectifies his observations made concerning different Cyperaceae of Madagascar. He has brought together many facts concerning species of the genera *Kyllingia*, *Mariscus*, *Pycreus* and *Cyperus*. *Lipocarpa paradoxa* H. Cherm. is a *Mariscus*, *M. paradoxus* H. Cherm. *Cyperus mangorensis* H. Cherm. is only a variety of *C. volodioides* H. Cherm. A new variety, *Pycreus antsirabensis* var. *densior*, and a new species, *Bulbostylis pseudocollina*, are described.—R. Douin (transl. by E. B. Payson).

9628. CRAIB, W. G. Contributions to the flora of Siam. Kew Bull. 1925: 7-23. 1925.—The following new species are described: *Talauma betongensis*, *Sageraea reticulata*, *Cyatho-stemma longipes*, *Artabotrys brevipes*, *A. oblanceolatus*, *A. spinosus*, *Polyalthia socia*, *Oxymitra discolor*, *Goniothalamus expansus*, *Melodorum parvifolium*, *Miliusa elongata*, *Orophea fusca*, *Alphonsea pallescens*, *Viola angkæ*, *Rinorea fistulosa*, *R. helicterifolia*, *Scyphellandra Marcarii*, *Pittosporum Kerrii*, *Polygala ardisioides*, *Calophyllum sangkæ*, *Adinandra coarctata*, *A. lutes-cens*, *Ancistrocladus caralloides*, *Decuschestia eximia*, *Grewia Winitii*, *Colona elobata*, *Cor-chorus siamensis*, *Schoutenia peregrina*, *Sloanea Kerrii*, and *Elaeocarpus Lacei*.—T. J. Fitzpatrick.

9629. DAVY, J. BURTT. *Dianthus crenatus* Thunb. Kew Bull. 1925: 318. 1925.—Cer-tain specimens hitherto included in *Dianthus crenatus* are transferred to *D. mooiensis* Williams. Other specimens included in *D. crenatus* are transferred to its new variety *longicalyx*, here described.—T. J. Fitzpatrick.

9630. DE WILDEMAN, E. Matériaux pour la flore forestière du Congo Belge. [Material for the forest flora of the Belgian Congo.] Ann. Soc. Sci. Bruxelles 44³: 213-218. 1925.—Added information is given for *Piptadenia africana*, and the new species, *P. Lujai* and *P. Bequerti*, are described.—E. N. Munns.

9631. DE WILDEMAN, É. Matériaux pour la flore forestière du Congo Belge. VI. Sur l'*Osyris urundiensis* De Wild. (Santalacées). VII. Sur quelques espèces du genre *Croton* L. (Euphorbiacées). Ann. Soc. Sci. Bruxelles 44: 536-547. 2 pl. 1925.—*Croton Claes-sensi* Vermeesen, *C. Sereti* Vermeesen (*C. zambeziacus* De Wild., not Muell. Arg.) and *C. Wellensi* De Wild. are described and discussed.—Frederick V. Rand.

9632. DIELS, L. Menispermaceae madagascarienses novae. [New Menispermaceae of Madagascar.] Repert. Spec. Nov. Regni Veg. 17: 312-313. 1921.—The following new species are described: *Trichisia Jumelliana*, *Desmonema scytophyllum*, *Rhaptanema glabri-folia*, and *Cissampelos Perrieri*.—J. M. Greenman.

9633. DINTER, K. Index, der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannten gewordenen Pflanzenarten. viii, ix. [Index to the known species of plants from German Southwest Africa up to the year 1917. viii, ix.] *Repert. Spec. Nov. Regni Veg.* 17: 258-266, 303-311. 1921.—The author continues the enumeration of plants of this series from No. 80 to No. 1075 inclusive. The following new species are included: *Eriocaulon pseudopygmaeum*, *Euphorbia Engleriana*, *E. Paxiana*, *E. pseudohypogaea*, *E. sarcostemmatoides*, *E. Schäferi*, *Marientalii*, *Gazania thermalis*, and *Geigeria rhombifolia*.—J. M. Greenman.
9634. DINTER, K. Index, der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannten gewordenen Pflanzenarten. X, XI, XII. [Index to the known species of plants from German Southwest Africa up to the year 1917. X, XI, XII.] *Repert. Spec. Nov. Regni Veg.* 18: 13-16, 248-256, 423-444. 1922.—The enumeration of species is carried forward from No. 1076 to No. 1550 inclusive. The following species are indicated as new: *Helichrysum aromaticum*, *Engelmannia*, *Heliotropium pseudostrigosum*, *Hermannia atrosanguinea*, *H. Brandtii* Engl., *H. violifolia* Engl., *Hermbstaedtia ovata*, *H. Schäferi*, *Hibiscus strictus*, *Homochaete Dinteriana*, *Muschler*, *Hoodia Dinteri* Schltr., *Indigofera acanthoclada*, *I. acanthorhachis*, *I. candidissima*, *Kalanchoe gregaria*, *K. pruinosa*, *Kedrostis eminens* Gilg, *Lactuca pallidicoerulea*, *Lapeyrousia Vaupeliana*, *Lightfootia Dinteri* Engl., *Limeum frutescens*, *L. omahekense*, *L. sol* (Semonville) sol H. Walter, *Limosella monticola*, *Loranthus Acaciaedelinentis*, *Lotononis Curtii* Harms, *L. brachyantha* Harms, *L. lisztoides* Dtr. & Harms, *L. pallidirosea* Dtr. & Harms, and *L. Rabenaviana* Dtr. & Harms.—J. M. Greenman.
9635. DINTER, KURT. Succulentenforschungen in Südwestafrika. *Repert. Spec. Nov. Regni Veg. Beihefte* 23: 1-80. 1923.
9636. DOMINGUEZ, JUAN A. El "Cissampelos pareira" L. y sus variedades argentinas (fam. Menispermaceae). ["Cissampelos pereira" L. and its Argentine varieties.] *Physis* 7: 154-162. 1924.—*Cissampelos pareira* L. and its 3 varieties, *australis* (St. Hil.), *gardneri*, and *tamoides* (Willd.), are carefully described and the distribution of each in Argentina is portrayed. Then follow sections on history and morphology, chemical composition, and pharmacodynamical action, properties and uses.—F. W. Pennell.
9637. DOWNIE, D. G. Contributions to the flora of Siam. *Kew Bull.* 1925: 367-394. 1925.—Diagnoses are given of orchids collected by A. F. G. Kerr, all of which are credited to R. A. ROLFE, manuscripts. The new species are *Microstylis carnosula*, *M. siamensis*, *M. sutepensis*, *M. tenebrosa*, *Liparis odorata* Lindl. var. *longiscapa*, *L. siamensis*, *L. sutepensis*, *L. tenuis*, *Dendrobium Dixonianum*, *D. indivisum* Miq. var. *lampangense*, *D. sutepense*, *Cirrhopetalum siamense*, *C. sutepense*, *Eria sutepensis*, *E. Wildiana*, *Ascotainia siamensis*, *A. sutepensis*, *Ceratostylis siamensis*, *Eulophia Burkei*, *E. siamensis*, *Cymbidium Kerrii*, *C. siamense*, *C. sutepense*, *Geodorum siamense*, *Luisia latilabris*, *L. siamensis*, *Diploprora truncata*, *Sarcochilus sutepensis*, *Aerides flabellatum*, *Saccolabium hoyopse*, *S. monticulum*, *S. spatulatum*, *S. sutepense*, *Sarcanthus bicuspidatus*, *S. crassifolius*, and *S. flagelliformis*.—T. J. Fitzpatrick.
9638. DOWNIE, D. G. Contributions to the flora of Siam. *Kew Bull.* 1925: 404-423. 1925.—The final paper on the orchids of Siam. The following species are described as new, all credited to R. A. ROLFE, manuscripts: *Sarcanthus recurvus*, *S. siamensis*, *S. carinatus*, *Cleisostoma siamense*, *Ascochilus loratus*, *Galeola integra*, *G. Kerrii*, *G. nana*, *G. siamensis*, *Vanilla siamensis*, *Anoetochilus Lylei*, *A. multiflorus*, *Odontochilus repens*, *Zeuxine sutepensis*, *Z. vittata*, *Aphyllorchis caudata*, *A. unguiculata*, *Leucolena siamensis*, *Gastrodia siamensis*, *Habenaria amplexicaulis*, *H. aurantiaca*, *H. Garrettii*, *H. humistrata*, *H. recurva*, *H. sutepensis*, *H. trichochila*, *Platanthera Lacei*, and *Dispersis siamensis*.—T. J. Fitzpatrick.
9639. DROBOV, V. Gramineae novae turkestanicae. I. *Repert. Spec. Nov. Regni Veg.* 21: 37-46. 1925.—A series of articles on new grasses from Turkestan is begun, with descriptions of the following new species and varieties: *Stipa bella*; *S. caucasica* Schmalh. var. *typica*, var. *ligulata*, var. *major*, var. *Tranzschelii*; *Bromus turkestanicus*; *B. pamiricus*; *B. angrenicus*; *B. kopetdagensis*; *B. sericeus*; *B. pseudodanthoniae*; *B. Abolinii*; *B. ugamicus*; *B. Popovii*; *Agropyron czimganicum*; *A. macrolepis*; *A. ugamicum*; *A. tianschanicum*; *A. Abolini*; *A. turkestanicum*; *A. czilikense*; *A. alatavicum*; *A. elongatiforme*; *A. Popovii*; *A. badamense*; *Elymus tianschanicus*; *E. divaricatus*; and *E. ugamicus*.—R. E. Woodson, Jr.
9640. ENGLER, A. Ein neuer Amorphophallus aus Südchina. [A new Amorphophallus

from South China.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 187. 1922.—*Amorphophallus mellii* collected by Mell in Kwang-tung, southern China, is described.—F. W. Pennell.

9641. FEDDE, FRIEDRICH. *Corydalis stricta* Steph. var. *Potanini* var. nov. aus dem südlichen Altai. Repert. Spec. Nov. Regni Veg. 17: 448. 1921.

9642. FEDDE, F. Neue Arten von *Corydalis* aus China. VI. VII. VIII. [New species of *Corydalis* from China. VI. VII. VIII.] Repert. Spec. Nov. Regni Veg. 20: 50-63, 286-297, 352-359. 1924.—The following new species and varieties from China are described: *Corydalis Giraldui*; *C. eduloides* and var. *haimensis*; *C. Smithiana*; *C. Handel-Mazzettii*; *C. calcicola* var. *szechuanica*; *C. pseudotomentella*; *C. curviflora* Maxim. vars. *cystiflora* and *Smithii*; *S. Schwerianiana*; *C. Rheinbabeniana*; *C. Quantmeyeriana*; *C. pseudasterostigma*; *C. pseudobarbisepala*; *C. glycyphyllos*; *C. Lauchiana*; and *C. acropteryx*.—R. E. Woodson, Jr.

9643. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus China. IX. [New species of *Corydalis* from China. IX.] Repert. Spec. Nov. Regni Veg. 21: 46-52. 2 pl. 1925.—The following new species of *Corydalis* are described and illustrated: *Corydalis pseudimpatiens*; *C. Schusteriana*; *C. vivipara*; *C. Linstowiana*; *C. pseudoclematis*; and *C. odontostigma*.—R. E. Woodson, Jr.

9644. FEDDE, FRIEDRICH. Neue Arten von *Corydalis* aus dem Himalaya und den angrenzenden Teilen von Tibet. I. [New species of *Corydalis* from Himalaya and the adjacent parts of Tibet. I.] Repert. Spec. Nov. Regni Veg. 18: 28-32. 1922.—The following new species and varieties are described: *Corydalis urosepala*, *C. stracheyioides*, *C. adiantifolia* Hook. f. & Th. var. *dentipetala*, *C. nana* Prain var. *Jacquemontii*, *C. Gerdae* and *C. onobrychoides*.—J. M. Greenman.

9645. FEDDE, FRIEDRICH. *Pedicularis Limprichtii* nom. nov. Repert. Spec. Nov. Regni Veg. 18: 122. 1922.—The new name *Pedicularis Limprichtii* is based on *P. Dielsiana* Limpricht, not Bonati.—J. M. Greenman.

9646. FEDTSCHENKO, BORIS. Sur quelques genres énigmatiques décrits par Mr. N. Turczaninow. [Some enigmatic plant genera described by N. Turczaninow.] Svensk. Bot. Tidskr. 19: 490-94. 1 fig. 1925.—*Piptosaccos hypophyllantha* Turcz. is shown to be identical with *Dysoxylon ramiflorum* (Noronha) Miq. and *Tropidopetalum javanicum* Turcz. is identical with *Bouea macrophylla* Griff. *Heteropithmos floribunda* most probably belongs to *Meliosma*: *M. floribunda* (Turcz.) B. Fedtsch. Turczaninow's genus *Oligostemon* also belongs to *Meliosma*. *Peltostegia parviflora* is a species of *Kosteletzki*.—O. Heilborn.

9647. FISCHER, C. E. C. *Euphorbia caducifolia*. Kew Bull. 1925: 341-343. 1925.—In 1914 H. H. Haines published this species from limited material obtained in the central provinces of India. In 1921 and 1922 ample material was obtained in the Madras Presidency. From this material an emended and amplified description is given.—T. J. Fitzpatrick.

9648. FISCHER, C. E. C. *Lappula uncinata* (Benth.) nom. nov. Kew Bull. 1925: 319. 1925.—This new name is for *Cynoglossum uncinatum* Benth.—T. J. Fitzpatrick.

9649. FOURNIER, P. *Novarum quarundam specierum ac varietatum diagnoses*. Bull. Soc. Bot. France 72: 544-545. 1925.—The author gives the Latin diagnosis of a new hybrid: \times *Salix negata* (*S. Capraea* \times *fragilis*) and of the following new varieties: *Vinca minor* L. var. *nummulariaefolia*, *Pirola rotundifolia* L. var. *Chloranthoides*, *Poa trivialis* L. var. *agrostoides*, *Veronica agrestis* (L.) Rehb. vars. *Boreana* and *Garekiana*, *V. opaca* Fries var. *eglandulosa*, *Anthyllis Dillenii* Schulthes var. *croceifera* (= *A. Vulneraria pseudo-Vulneraria* Sagorski var. *bicolor* Sagorski).—A. Tronchet (transl. by E. B. Payson).

9650. FRITSCH, K. Neue *Besleria*-Arten. [New species of *Besleria*.] Repert. Spec. Nov. Regni Veg. 18: 7-13. 1922.—The following new species are described: *Besleria peruviana*, Peru; *B. microphylla*, Colombia; *B. Kalbreyeri*, Colombia; *B. minutiflora*, Peru; *B. penduliflora*, Venezuela; *B. floribunda*, Colombia; *B. corallinoides*, Ecuador; *B. Sodiroana*, Ecuador; *B. Calceolus*, Ecuador; and *B. corallina*, Peru.—J. M. Greenman.

9651. FUENTES, FRANCISCO. Notas sobre el quinquin (*Uncinia phleoides* Pers.). [Notes on "quinquin" (*Uncinia phleoides* Pers.)] Rev. Chilena Hist. Nat. 29: 209-213. 1925.—After a brief generic account of *Uncinia*, *U. phleoides* (Cav.) Pers. is described in detail, and 4 of its varieties are further considered.—F. W. Pennell.

9652. FUENTES M., FRANCISCO. Nota sobre los *Notoscordios* chilenos. [Note on the Chil-

ean *Nothoscordums*.] *Rev. Chilena Hist. Nat.* 25: 233-240. 1921.—Following a characterization of the genus *Nothoscordum*, an account is given of the history and special features of the species previously proposed from Chile: *N. brevispathum* Phil., *N. flavescens* Kunth, *N. nidulans* Phil., *N. Poeppigii* Kunth, *N. striatellium* Kunth, *N. strictum* Gay, and *N. vernum* Phil. The author's disposition of these is stated, and further summarized in the detailed analytical key that follows the discussion. No claim of new combinations is made but evidently these should be ascribed to Fuentes. The species and varieties recognized are: *N. andinum* (Poepp.) Kunth; *N. gramineum* (Sims) Beauv. and its varieties, *flavescens* (Kunth) Fuentes and *vernum* (Phil.) Fuentes; *N. sellowianum* Kunth. and its variety, *brevispathum* (Phil.) Fuentes; and *N. inodorum* (Ait.) Aschers & Graebn., reported from Argentina.—*F. W. Pennell*.

9653. GAGNEPAIN, F. *Euphorbiacées nouvelles* (*Actephila*, *Antidesma*, *Baliospermum*, *Blachia*, *Cleistanthus*, *Croton*, *Daphniphyllum*, *Epiprinus*, *Mallotus*, *Nephrostylus*, *Poilaniella* n.g., *Prosartema*, *Trigonostemon*). [*New Euphorbiaceae* (*Actephila*, *Antidesma*, *Baliospermum*, *Epiprinus*, *Mallotus*, *Nephrostylus*, *Poilaniella*, n.g., *Prosartema*, *Trigonostemon*.)] *Bull. Soc. Bot. France* 72: 468-470. 1925.—The author gives diagnoses of the following new species and genera: *Actephila anthelminthica*, near *A. excelsa* Muell., from Annam; *A. macrantha*, near *A. nitidula*, Annam; *Antidesma phanrangense*, near *A. diandrum*, Annam; *Baliospermum Balansae*, near *B. corymbiferum*, Tonkin; *Blachia Thorelii*, distinguished from all its Indo-Chinese congeners by its 3 undivided styles, Laos; *Cleistanthus annamensis*, Annam; *Croton dodecamerus*, Annam; *C. longipes*, Annam; *C. maieuticus*, Annam; *C. nanus*, Laos; *C. salicifolius*, Annam; *Daphniphyllum phanrangense*, Annam; *Epiprinus Poilanei*, Annam; *Mallotus Poilanei*, Annam; *Nephrostylus* n. gen., *N. Poilanei*, Annam, a genus remarkable by the absence of petals and of a disc, by the considerable development of the stigmata in lobed, reniform plates and by the calyx which is not closed even in the bud; *Poilaniella* n. gen., *P. fragilis*, Annam, this genus is near *Trigonostemon*; *Prosartema Gaudichaudii*, Annam; *Trigonostemon phyllo-calyx*, Annam; *T. sanguineus*, Annam, remarkable for its ample pyramidal inflorescence. Its pistillate flowers and fruits are unknown to the author.—*L. Faucheron* (transl. by *E. B. Payson*).

9654. GAGNEPAIN, F., AND L. BEILLE. *Euphorbiacées*. [*Euphorbiaceae*.] In: *Lecomte Fl. Gén. Indo-Chine* 5: 229-372. 17 fig. 1925.—Seventy-nine genera are represented and keyed out, including the 2 genera of the *Buxaceae* which is generally considered to represent a distinct family. The first 23 genera are considered in this part, the larger ones being *Euphorbia* 25 species, *Croton* 40 species, *Trigonostemon* 17 species, *Acalypha* 11 species, *Mallotus* 15 species and *Coelodiscus* 11 species, the latter placed by most authors under *Mallotus*. The following new names appear: *Croton dodecamerus*, *C. nanus*, *C. longipes*, *C. maieuticus*, and *Prosartema laotica* (*Trigonostemon laoticus* Gagnep.).—*E. D. Merrill*.

9655. GAMBLE, J. S. *New Lauraceae from southern India*. *Kew Bull.* 1925: 126-132. 1925.—The new species are: *Cryptocarya anamalayana*; *C. Beddomei*, *C. Bourdillonii*, *C. Lawsonii*, *Cinnamomum riparium*, *C. travancoricum*, *Actinodaphne Bourneae*, *A. Bourdillonii*, *A. Lawsonii*, *A. Tadulingami*, *Litsea mysorensis*, *L. insignis*, *L. Bourdillonii*, *L. travancorica*, and *Neolitsea Fischeri*.—*T. J. Fitzpatrick*.

9656. GANDOGHER, MICHEL. *Les variations onosmatiques des Micromeria Bth. et la question du trinôme*. [*The Onosma-like variations of Micromeria Bth. and the question of the trinomial*.] *Bull. Soc. Bot. France* 72: 700-705. 1925.—The genus *Micromeria* includes about 70 species. It is divided into 3 sections or subgenera: *Eumicromeria*, *Piperella* and *Phyllotephrum*, given in the author's *Flora Europae* vol. 17, page 187. Like all the Labiatae it shows many variations of the same type. *M. graeca*, *M. nervosa*, *M. Juliana*, etc., may be subdivided in 40, 60, 80 different forms. The author gives some examples of them.—*J. Beauverie* (translated by *E. B. Payson*).

9657. GANDOGHER, MICHEL. *Plantes de Chine du R. P. Chanet, 3e note*. [*Chinese plants of R. P. Chanet, 3rd note*.] *Bull. Soc. Bot. France* 72: 608-611. 1925.—The author, after having recalled the names of the French missionaries who have contributed to the study of the Chinese flora, records that Pere Chanet has collected in Tche and Shansi. He has also collected nearly all the species discovered by Bunge in his voyage to the north of China in 1829

and not rediscovered since. The number of plants reported from central China is raised to about 2000. The author gives a list of his determinations. Among the novelties are *Cymbaria Chaneti* and *Avena pratensis* f. *longiseta*. The plants of this series were collected at altitudes between 800 and 2000 m. Gandoger gives the list of works which have been of service in his determinations.—*J. Beauverie* (transl. by *E. B. Payson*).

9658. GÁYER, G. *Diagnoses novae*. *Repert. Spec. Nov. Regni Veg.* 22: 189-191. 1925. *Repert. Eur. et Med.* 1: 813-815. 1925).—Descriptions are given of the following new plants: *Aconitum Ferdinandi Regis*, from Serbia; *A. judenbergense* × *paniculatum* = × *A. Murria-*
um n. hyb., from the Tyrol; *Rubus bakonyensis*, from Hungary; *Corylus Avellana* L. f. *ulmifolia* Gáy. & Murr., from Innsbruck, and f. *crispifolia* Gáy. & Murr., from the Tyrol; *Betula pubes-*
ens Ehrh. f. *nummifolia*; *Rhamnus frangula* L. f. *laurifolia*, from the Tyrol; and *Prunus*
pinosa L. f. *argyrophylla*, from western Hungary.—*John E. Dinsmore*.

9659. GELLERT, MAGDALENE. Anatomische Studien über den Bau der Orchideenblüte. [Anatomical studies on the structure of orchid flowers.] *Repert. Spec. Nov. Regni Veg. Bei-*
hefte 25: 1-66. 84 fig. 1923.

9660. GÖRZ, R. Über norddeutsche Weiden. Versuch einer kritischen Betrachtung
ihrer Artenheit und Formenkreise auf Grundlage der Weiden Brandenburgs. [North German
willows.] *Repert. Spec. Nov. Regni Veg. Beihefte* 13: 1-127. 1922.—Fourteen species are
recognized. Numerous forms, subforms, etc., are also differentiated.—*J. M. Greenman*.

9661. GREEN, M. L. *Saxafraga odontophylla* and *S. asarifolia*. *Kew Bull.* 1925: 189-190.
1925.—Discussion is given of the synonymy; and *S. asarifolia* is regarded as the name to be
accepted.—*T. J. Fitzpatrick*.

9662. GREEN, M. L. Species of *Grewia* described by Bojer. *Kew Bull.* 1925: 231-239.
1925.—In 1846 Bojer described 6 new species of *Grewia* from Madagascar and Tropical East
Africa. The paper was published in *Procès-Verbaux de la Société d'Histoire Naturelle de*
l'Île Maurice, 1842-1845, pp. 26-30. The paper is rare, not mentioned by Pritzel, and over-
looked during the compilation of the Index Kewensis. The species are here redescribed and
fully annotated. They are *Grewia ulmifolia*, *G. stenophylla*, *G. micrantha*, *G. rhomboides*, *G.*
capitellata, and *G. comorensis*.—*T. J. Fitzpatrick*.

9663. GREEN, M. L. Standard-species of *Lepidium* and *Biscutella*. *Kew Bull.* 1925:
315-317. 4 fig. 1925.—The author thinks *Lepidium latifolium* and *Biscutella didyma* should
be accepted as the standard-species.—*T. J. Fitzpatrick*.

9664. GÜNKEL, L. HUGO. Una nueva especie chilena del género *Miersia*. [A new Chil-
ean species of the genus *Miersia*.] *Rev. Chilena Hist. Nat.* 29: 296-299. 6 pl. 1925.—
Miersia scalae Gunkel n. sp., from the province of Concepcion, Chile, is described in detail;
and bibliographic references given for the 3 species of *Miersia* previously known.—*F. W.*
Pennell.

9665. GUYOT, H. Sur l'origine du *Dryas octopetala* L. *lusus* Christii Guyot et du *Pulsa-*
tilla Halleri Willd. *Verh. Naturf. Ges. Basel* 35: 163-173. 1 pl. 1923.

9666. HARMS, H. Drei neue Leguminosen aus Venezuela. [Three new Leguminosae
from Venezuela.] *Notizbl. Bot. Gart. Mus. Berlin-Dahlem* 8: 51-52. 1921.—*Calliandra*
polyphylla, *Piptadenia pittieri* and *Pithecolobium caraboboense* are described as new to science.
—*F. W. Pennell*.

9667. HARMS, H. Einige neue *Lonchocarpus*-Arten aus dem tropischen Amerika. [Some
new species of *Lonchocarpus* from tropical America.] *Repert. Spec. Nov. Regni Veg.* 17: 320-
325. 1921.—The following new species are described: *Lonchocarpus argyrotichus*, Mexico;
L. dasycalyx, Brazil; *L. Ernesti*, Brazil; *L. Galeottianus*, Mexico; *L. Kerberi*, Mexico; *L. mala-*
cotrichus, Mexico; *L. Salvini*, Guatemala; *L. Seleri*, Mexico; and *L. stenodon*, Mexico.—*J. M.*
Greenman.

9668. HARMS, H. Einige neue *Meliaceen* aus Peru. I. [Some new *Meliaceae* from Peru.
I.] *Repert. Spec. Nov. Regni Veg.* 18: 447-448. 1922.—The following Peruvian plants are
described as new to science: *Cabralea Weberbaueri* and *Gaurea subviridiflora*.—*J. M. Greenman*.

9669. HARMS, H. *Leguminosae africanae*. *Notizbl. Bot. Gart. Mus. Berlin-Dahlem* 8:
145-156. 1922.—Fifteen new species and 1 new variety are described, all from tropical Africa
excepting the species of *Rhynchosia*, which are from South Africa. They are *Albizzia gracili-*

folia, *Berlinia ledermannii dolichopoda*, *B. magnistipulata*, *Brachystegia mildbraedii*, *Copaife mildbraedii*, *Crotalaria stenorhampha*, *Leptoderris oxytropis*, *L. pycnantha*, *Macrobium chevalieri*, *M. cladanthum*, *M. klainei* Pierre mser., *M. quadrifolium*, *Pterocarpus mildbraedii*, *Rhychosia desertorum* and *R. rudolfi*. *Pithecolobium dinklagei* n. comb. is proposed, based upon *Mimosa dinklagei* Harms from Liberia.—*F. W. Pennell*.

9670. HARMS, H. Leguminosae americanae novae. I. Repert. Spec. Nov. Regni Veg. 11: 442-445. 1921.—The following new species are described: *Calliandra chotanoana*, Peru; *Andira Zehntneri*, Brazil; *Pterocarpus Zehntneri*, Brazil; *Platycyamus Ulei*, Brazil; and *Clitoria brachycalyx*, Brazil.—*J. M. Greenman*.

9671. HARMS, H. Leguminosae americanae novae. II. Repert. Spec. Nov. Regni Veg. 18: 93-95. 1922.—The following new species are described: *Mimosa Endlichii*, Mexico; *Cassia Augusti*, Peru; *C. huancabambae*, Peru; *C. Kurtzii*, Argentina; *Brongniartia Caeciliae*, Mexico; and *B. Seleri*, Mexico.—*J. M. Greenman*.

9672. HARMS, H. Leguminosae americanae novae. III. Repert. Spec. Nov. Regni Veg. 18: 232-237. 1922.—In continuation of his studies on the Leguminosae the author records important notes on previously published species and proposes the following new species: *Mimosa Ernesti*, Brazil; *M. Widgrenii*, Brazil; *Piptadenia Weberbaueri*, Peru; *Bauhinia Augusti*, Peru; *B. Ruiziana*, Peru; *Sclerolobium Weberbaueri*, Peru; *Swartzia Weberbaueri*, Peru; *Coursetia tephrodes*, Peru; *Cracca poliophylla*, Peru; *C. heterantha* (*Tephrosia heterantha* Griseb.) and *Amicia andicola* (*Zornia andicola* Griseb.).—*J. M. Greenman*.

9673. HARMS, H. Leguminosae americanae novae. VII. Repert. Spec. Nov. Regni Veg. 20: 123-136. 1924.—This series of new Leguminosae from America is continued with descriptions of the following new species of *Cassia*: *C. crommyotricha* and *C. craspedoneura* both from Brazil.—*R. E. Woodson, Jr.*

9674. HARMS, H. Leguminosae. In: MILD BRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 228-229. 1922.—*Astragalus somalensis lindblomii* is described, collected by Lindblom in 1920.—*F. W. Pennell*.

9675. HARMS, H. Neue Arten der Gattung Passiflora L. [New species of the genus Passiflora L.] Repert. Spec. Nov. Regni Veg. 18: 294-299. 1922.—The following new species are described: *Passiflora cremastantha*, Colombia; *P. leptomischa*, Colombia; *P. eriocaula*, Colombia; *P. callimorpha*, Bolivia; *P. hypoglaucha*, Brazil; *P. Mendoncae*, Brazil; *P. tribolophylla*, Colombia; *P. Sodiroid*, Ecuador; and *P. Platyceras*, Peru.—*J. M. Greenman*.

9676. HARMS, H. Sclerothamnus, eine neue Gattung der Leguminosae—Papilionatae aus Mexico. [Sclerothamnus, a new genus of the Leguminosae, subfamily Papilionatae, from Mexico.] Repert. Spec. Nov. Regni Veg. 17: 325-326. 1921.—Sclerothamnus is proposed as a new genus with the following species: *S. pentaphyllus*, *S. Purpusii*, and *S. Ehrenbergii*.—*J. M. Greenman*.

9677. HARMS, H. Über einige Carica-Arten aus Südamerika, mit besonderer Berücksichtigung der peruanischen Arten. [Species of Carica from South America, with especial consideration of the Peruvian species.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 91-100. 1922.—This paper discusses various species of *Carica* (Caricaceae), nearly all of which are from Peru. As new to science are described *C. leptantha* and *C. Weberbaueri* from Peru, *C. fiebrigii* from Bolivia, and *C. glazioviana* from Brazil.—*F. W. Pennell*.

9678. HARMS, H. Über zwei neue Arten der Gattung Malesherbia aus Peru. [Two new species of Malesherbia from Peru.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 209-212. 1922.—*Malesherbia angustisecta* and *M. haemantha* are described, both based upon collections made by Weberbauer in 1915, Department of Arequipa, Peru. There is added a key to the Peruvian species of this genus.—*F. W. Pennell*.

9679. HAUMAN, LUCIEN. Notes sur le saule sud-américain et sur la valeur des espèces botaniques de Molina. [Notes on the South American willow and on the worth of the botanical species of Molina.] Physis 7: 67-81. 2 pl. 1923.—This paper divides into 2 sections: (A) Sur la valeur des espèces de Molina. The new genera and species, published by G. I. Molina in his "Saggio sulla storia naturale del Chile" in 1782, were so sketchily and inaccurately described that efforts to identify them have resulted in much confusion and needless replacing of

later well-described species. Numerous instances are considered in detail. Then is presented a summary of all Molina's new names, with later identifications wherever possible.—(B) Le saule sud-américain. In the list of Molina's names it was shown that *Salix chilensis* Mol. was probably not a willow at all, although it remains unidentified. Therefore the well-known name, *S. humboldtiana* Willd., may be retained for the widely distributed South American species. A discussion of other names proposed from South America is given, with reasons for placing them in the synonymy of this or its 2 recognized varieties. A list of specimens seen from southern South America is presented; then a summary of the geographic distribution and an account of the floral features.—*F. W. Pennell.*

9680. HAUMAN, LUCIEN. The genus *Poissonia* Baillon. Kew Bull. 1925: 276-279. 1 fig. 1925.—A key is given and annotations are made on the three species and one variety, all of which are new combinations. *Poissonia orbicularis* (Benth.), *P. orbicularis* var. *mantaroana*, and *P. eriantha* (Benth.) are from the genus *Coursetia* and *P. hypoleuca* is from *Chiovendaea*.—*T. J. Fitzpatrick.*

9681. HAYEK, A. *Plantae novae orientales*. II. Repert. Spec. Nov. Regni Veg. 21: 256-261. 1925.—The following new species, subspecies, and varieties are described: *Seseli Vandasii*, Serbia, Macedonia; *Armeria Vandasii*, Serbia, Macedonia; *Stachys euphratica*, Armenia; *Hieracium macrotrichum* Boiss. subsp. *pletvariense* Zahn, Macedonia, Serbia; *H. Bauhini* Bess. subsp. *acrorhabdotum* Zahn., Serbia, Macedonia; *H. pannosum* Boiss. subsp. *eumecobracchion* Zahn, with vars. *angustius*, and *latius*, Macedonia, Serbia; *H. Pichleri* A. Kern. subsp. *ochridanum* Zahn, Macedonia, Serbia; *H. Waldsteini* Tausch. subsp. *Vojtinae* Zahn, Macedonia, Serbia; *H. sericophyllum* Nejš. & Zahn subsp. *sericophylloides*, Macedonia, Serbia; and *Allium Bornmülleri*, Macedonia, Serbia.—*R. E. Woodson, Jr.*

9682. HENRARD, J. TH. *Aristida Balansae* spec. nov. aus Cochinchina. [Aristida Balansae, new species from Cochinchina.] Repert. Spec. Nov. Regni Veg. 17: 397-398. 1921.

9683. HENRARD, J. TH. *Panicum pseudovirgatum* spec. nov. aus Laos. Repert. Spec. Nov. Regni Veg. 18: 241-242. 1922.—*Panicum pseudovirgatum* is described as a new species from Laos, Indo China.—*J. M. Greenman.*

9684. HENRARD, J. TH. *Paspalum yaguaronense* spec. nov. aus Paraguay. Repert. Spec. Nov. Regni Veg. 18: 238-240. 1922.

9685. HENRARD, J. TH. *Sporobolus Harmandii* spec. nov. aus Cochinchina. Repert. Spec. Nov. Regni Veg. 21: 235-236. 1925.

9686. HENRARD, J. TH. *Trichopteryx Stolziana* spec. nov. aus Nyassaland. Repert. Spec. Nov. Regni Veg. 18: 242-243. 1922.

9687. HENRARD, J. TH. *Zenkeria Stapfii* spec. nov. aus Ost-Indien. [Zenkeria Stapfii n. sp. from East India.] Repert. Spec. Nov. Regni Veg. 17: 396-397. 1921.

9688. HERRERA, FORTUNATO L. Las Cactaceas de los alrededores de la ciudad del Cuzco. [The Cactaceae of the vicinity of the city of Cuzco.] Rev. Chilena Hist. Nat. 27: 31-38. 2 pl. 1923.—In the vicinity of Cuzco, Peru, grow the following Cactaceae, for each of which, in addition to a description, is stated the common name, the distribution and its use by the natives: *Erdicia squarrosa* (Vaupel) Britton & Rose, *Lobivia corbula* (Herrera) B. & R., *Opuntia exaltata* Berger, *O. floccosa* Salm Dyck, *O. soehrensii* B. & R., and *Trichocereus cuzcoensis* B. & R.—*F. W. Pennell.*

9689. HERZOG, TH. Neue südamerikanische Eriocaulonaceae. [New South American Eriocaulonaceae.] Repert. Spec. Nov. Regni Veg. 20: 82-88. 1924.—The following new species and varieties are reported and described from Bolivia and Brazil: *Eriocaulon coniferum*, Bahia; *Paepalanthus albo-tomentosus*, Bahia; *P. barbulator*, Bahia; *P. Lützelburgii*, Bahia; *P. hispidissimus*, Bahia; *P. pulchellus*, Bahia; *P. manicatus* V. A. Pouls. var. *pulvinatus*, Bolivia; *P. chiquitensis*, Bolivia; *P. Ruhlandii*, Bahia; *Leiothrix tinguensis*, Bahia; *L. distichoclada* and var. *glandulosa*, Bahia.—*R. E. Woodson, Jr.*

9690. HILL, A. W. New species of *Strychnos* from Siam. Kew Bull. 1925: 423-426. 1925.—The new species are *Strychnos viridiflora*, *S. roborans*, *S. Kawbet*, and *S. Kerrii*.—*T. J. Fitzpatrick.*

9691. HONDA, M. *Oplismeni novi Japonici*. [New species of Oplismenus from Japan.] Repert. Spec. Nov. Regni Veg. 20: 360-362. 1924.—The following new species are described

from Japan: *Oplismenus tsushimensis*; *O. patens*; *O. Owaterii*; *O. formosanus*; and *O. polliniifolius*.—R. E. Woodson, Jr.

9692. HUTCHINSON, J. Contributions towards a phylogenetic classification of flowering plants. V. Kew Bull. 1925: 161–168. 1925.—This contribution considers the genera of Papaveraceae. There is given a key to the tribes and genera, selected literature, characters occurring in relatively few genera or species, notes on phylogeny and classification, geographic distribution, followed by annotations for the 23 genera recognized. The paper concludes with a few corrections for previous contributions.—T. J. Fitzpatrick.

9693. JOHOW, FEDERICO. Las Cactaceae de los alrededores de Zapallar. [The Cactaceae of the vicinity of Zapallar.] Rev. Chilena Hist. Nat. 25: 152–166. 1921.—Detailed descriptions are given of the following Cactaceae observed near Zapallar, Aconcagua, Chile: *Cereus litoralis* n. sp., *Echinocactus acutissimus* Otto & Dietr. and *E. chilensis* Hildm.—F. W. Penne.

9694. KNUTH, R. Dioscoraceae novae. I. Repert. Spec. Nov. Regni Veg. 21: 77–8. 1925.—The following new species are described fully: *Dioscorea santosensis*, Brazil; *C. Friesii*, Bolivia; *D. chacoensis*, Bolivia; *D. fuliginosa*, Bolivia; *D. similis*, Brazil; *D. rigida*, Cuba; *D. Widgrenii*, Brazil; *D. Huüi*, southeastern China; *D. kiangsiensis*, southeastern China; and *Rajania Ekmanii*, Cuba.—R. E. Woodson, Jr.

9695. KNUTH, R. Geraniaceae novae. Dekas I. Repert. Spec. Nov. Regni Veg. 18: 289–294. 1922.—The following species are described as new to science: *Geranium nyassense*, Nyassaland; *G. Santacruzense*, Argentina; *G. piurense*, Peru; *G. Arsenianum*, Mexico; *G. ayacuchense*, Peru; *G. Santanderiense*, Colombia; *G. ukingense*, German East Africa; *G. knysnaense*, Natal; *Pelargonium scabroide*, southwestern Cape Province; and *P. Klinghardtense*, German Southwest Africa.—J. M. Greenman.

9696. KRÄNZLIN, FR. Drei Amaryllidaceen des Liebmannschen Herbars. [Three Amaryllidaceae from Liebmann's herbarium.] Repert. Spec. Nov. Regni Veg. 21: 75–76. 1922.—The following new species and variety are described from Mexico: *Cooperia miradorensis* and *Bomarea cornigera* Herb. var. *Liebmanniana*. *B. miniata* Kunth is redescribed.—R. E. Woodson, Jr.

9697. KRÄNZLIN, FR. Masdevalliae novae. Repert. Spec. Nov. Regni Veg. 17: 411–438. 1921.—The following species are described as new to science: *Masdevallia Huebschiana*, Colombia; *M. bulbophylloids*, Ecuador; *M. Zahlbruckneri*, Costa Rica; *M. vulcanica* Lehm. & Kränzlin, Ecuador; *M. superflua*, Costa Rica; *M. sanctae fidei*, Colombia; *M. remotiflora*, Colombia; *M. popayanensis* Lehm. & Kränzlin, Colombia; *M. mollosoides*, Costa Rica; *M. leucantha* Lehm. & Kränzlin, Colombia; *M. anaristella*, Costa Rica; *M. trinemoides*, Colombia; *M. pachygyne*, native country unknown; *M. Mopsus*, Lehm. & Kränzlin, Ecuador; *M. medellinensis*, Colombia; *M. lactea*, Colombia; *M. frontinoensis*, Colombia; *M. carderiopsis* Lehm. & Kränzlin, Colombia; *M. alismifolia*, Colombia; *M. sulphurea* Lehm. & Kränzlin, Ecuador; *M. Rechingieriana*, Venezuela; *M. pastensis*, Ecuador; *M. Paisbambae* Lehm. & Kränzlin, Colombia; *M. flaccida*, Colombia; *M. dermatantha*, probably native of Colombia; *M. carpophora*, Costa Rica; *M. aequatorialis* Lehm. & Kränzlin, Ecuador; *M. deformis*, Ecuador; *M. crescenticola*, Lehm. & Kränzlin, Colombia; *M. ocañensis*, Colombia; *M. fissa*, Colombia; *M. aperta*, Costa Rica; *M. nutans* Lehm. & Kränzlin, Ecuador; *M. xerophila* Lehm. & Kränzlin, Colombia; *M. Schmidcheni*, Colombia; *M. maxillariiformis* Lehm. & Kränzlin, Colombia; *M. anura*, Costa Rica; *M. Gomeziana* Lehm. & Kränzlin, Colombia; *M. funebris*, Costa Rica; *Scaphosepalum Endresianum*, Costa Rica; *S. reversum*, native country unknown; *S. naviculare*, Costa Rica; *Cryptophoranthus Endresianthus*, Costa Rica; and *C. Argus* Rehb. f.—J. M. Greenman.

9698. KRAENZLIN, F. New species of Masdevallia and allied genera. Kew Bull. 1925: 97–117. 1925.—The new species are: *Masdevallia spathulifolia*, Ecuador; *M. spenopetala*, Ecuador; *M. Carruthersiana* F. C. Lehm., Ecuador; *M. palmensis*, Colombia; *M. sarcophylla*, Colombia; *M. schizopetala*, Colombia; *M. simulatrix*, Ecuador; *M. Sanctae-Rosae*, Colombia; *M. Corderoana* F. C. Lehm., Ecuador; *M. chiquindensis*, Ecuador; *M. filamentosa*, Ecuador; *M. trigonopetala*, habitat unknown; *M. chimboensis*, Ecuador; *M. endotrachys*, Ecuador; *M. chlorotica*, Colombia; *M. fertilis*, Colombia; *M. diversifolia*, Ecuador; *M. quilibaoensis* Lehm. & Kraenzlin, Colombia; *Scaphosepalum odontochilum*, Colombia; *Cryptophoranthus Rolfeanus*, Ecuador; *C. Argus*, emended description, Ecuador and Colombia; *C. pleurothallopsis*, Colombia.

ia. *Pseudoctomeria* n.gen. of Orchidaceae, *P. lentiginosa* n.comb., from *Pleurothallis lenti-*
ginosa Lehm. & Kraenzl., an epiphyte, a little above the soil in dense humid woods, Irazu
Mountain, Costa Rica.—*T. J. Fitzpatrick.*

9699. KRÄNZLIN, F. Orchidaceae Kalbreyerianae. II. Notizbl. Bot. Gart. Mus. Berlin-
Dahlem 8: 127-137. 1922.—Sixteen new species of Orchidaceae collected by Kalbreyer in
Colombia are described. These are *Masdevallia asperrima*, *M. atroviolacea*, *M. casta*, *M.*
audivolvula, *M. copiosa*, *M. cucutillensis*, *M. lactea*, *M. restrepiodea*, *M. schizantha*, *M.*
tenorhynchos, *M. trionyx*, *M. urceolaris*, *Ornithocephalus kalbreyerianus*, *Scaphosepalum*
antioquiense, *S. grande* and *S. nutans*.—*F. W. Pennell.*

9700. KRÄNZLIN, FR. Orchidaceae novae. Repert. Spec. Nov. Regni. Veg. 17: 382-392.
1921.—The following new species of orchids are described from the Philippine Islands: *Bulbophyl-*
lum catenulatum, *B. syllectum*, *B. arrectum*, *B. trigonosepalum*, *B. Goebelianum*, *B. echinochilum*,
Phreatia xantholeuca, *Acampe Loheriana*, *Eria Loheriana*, *Tainia inamoena*, *Coelogyne Zahl-*
rucknerae, *C. minutissima*, *Vandopsis Kupperiana*, and *Saccolabium pantherinum*. *Notylia*
Lehmanniana and *Ionopsis orchioides* are described from Colombia; *Xylobium crassifolium*,
origin unknown; and *Pleurothallis vestita* is characterized from specimens cultivated at the
Botanic Garden of Nymphenburg near Munich, probably of Brazilian origin.—*J. M. Greenman.*

9701. KRAUSE, K. Lorantheae peruviana novae. Notizbl. Bot. Gart. Mus. Berlin-
Dahlem 8: 206-208. 1922.—Three new species are described, all collected by Weberbauer in
1912 in the Andes southeast of Piura, Peru. They are *Aetanthus ornatus*, *Psittacanthus cor-*
diae and *P. subulatus*.—*F. W. Pennell.*

9702. KRAUSE, K. Rubiaceae peruviana novae. Notizbl. Bot. Gart. Mus. Berlin-Dah-
lem 8: 101-103. 1922.—The following new species of Peruvian Rubiaceae are described:
Cephaelis cuspidulata collected by Ule, and *Palicourea polyneura*, *Psychotria semimetralis*,
P. tenuicaulis, and *Richardsonia rigidifolia* collected by Weberbauer.—*F. W. Pennell.*

9703. KÜKENTHAL, G. Cyperaceae novae. VI. Repert. Spec. Nov. Regni Veg. 18: 345-
346. 1922.—In continuation of previous studies the following new species are described:
Cyperus Meeboldii, British India; *C. remotiflorus*, German Southwest Africa; *C. kuebensis*
(*C. spissiflorus* K. Schum., not C. B. Clarke), Tropical Africa; and *C. Fiebrigii*, Bolivia.—*J.*
M. Greenman.

9704. KÜKENTHAL, G. Cyperaceae novae. VII. Repert. Spec. Nov. Regni Veg. 21: 325-
330. 1925.—The following new species and varieties are described in detail: *Cyperus laxespi-*
catus Kükenhal var. *brunneo-tinctus*, northwestern Rhodesia; *C. Ramosii*, Philippine Islands;
C. kilimandscharicus, Kilimandscharo; *C. Endlichii*, Kilimandscharo; *C. undulatus*, British
East Africa; *C. Holstii*, German East Africa; *C. pseudocallistus* Kükenhal var. *angustialatus*,
British East Africa; and *Carex phragmitoides*, German East Africa.—*R. E. Woodson, Jr.*

9705. LAMMERMÄYR, LUDWIG. Die Entwicklung der Buchenassoziation seit dem Tertiär.
Eine pflanzengeographische Studie. [Development of the beech association since the Ter-
tiary. A plant geographical study.] Repert. Spec. Nov. Regni Veg. Beihefte 24: 1-100. 7
maps. 1923.

9706. LIMPRICHT, W. Botanische Reisen in den Hochgebirgen Chinas und Ost-Tibets.
[Botanical journeys in the highlands of China and eastern Thibet.] Repert. Spec. Nov. Regni
Veg. Beihefte 12: 1-515. 9 maps. 30 photo. illust. 1922.—This work is divided into two
main parts, as follows: (1) Botanical journeys in the highlands of China and eastern Thibet
(A short historical survey of the botanical and geographical journeys for research in China
and eastern Thibet); (2) Enumeration of plants collected in eastern Asia by Dr. Limpricht
(compiled by F. Pax). The 1st is an interesting account for those concerned with its subject-
matter; the 2nd contains descriptions of the following new genera, species, and varieties:
Agrostis perlaxa Pilger; *A. Limprichtii* Pilger; *Cobresia pygmaea* C. B. Clarke var. *curvispica*
Kükenth.; *Carex conica* Boott var. *densa* Kükenth.; *C. conoides* Kükenth.; *C. atrofusca* Sch-
kuhr. var. *irritans* Kükenth.; *C. haematostoma* Nees var. *hirtelloides* Kükenth.; *C. Limprich-*
tiana Kükenth.; *Acorus gramineus* Soland. var. *crassispadix* Lingelsh.; *Arisaema undulatum*
Krause; *A. Limprichtii* Krause; *A. lobatum* Engl. var. *crenatum* Krause; *Juncus sikkimensis*
Hook. var. *pseudocastaneus* Lingelsh.; *Paradisea bulbifera* Lingelsh.; *Allium pseudocyanum*
Grüning; *Oligobotrya Limprichtii* Lingelsh.; *Iris leptophylla* Lingelsh.; *Cypripedium compac-*

tum Schltr.; *Aceratorchis* Schltr. n. gen. of the Orchidaceae; *A. albiflora* Schltr.; *A. tschilien.*
Schltr.; *Orchis Limprichtii* Schltr.; *O. Paxiana* Schltr.; *Hemipilia Limprichtii* Schltr.; *H.*
minium altigenum Schltr.; *Platanthera Winkleriana* Schltr.; *P. minax* Schltr.; *Habenaria tib.*
tica Schltr.; *Satyrjum aceras* Schltr.; *Epipactis xanthophaea* Schltr.; *E. schensiana* Schltr.
Cephalanthera Raymondiae Schltr.; *Bletilla yunnanensis* and var. *Limprichtii* Schltr.;
szetschuanica Schltr.; *Goodyera brevis* Schltr.; *Pleione Limprichtii* Schltr.; *Microstylis mo-*
phylla (Sw.) Lindl. var. *chinensis* Schltr.; *Eria szetschuanica* Schltr.; *Calanthe Limprichtii*
Schltr.; *Cymbidium cerinum* Schltr.; *C. pseudovirens* Schltr.; *Salix Limprichtii* Pax & K.
Hoffm.; *Loranthus pseudododoratus* Lingelsh.; *Rheum nanum* Lingelsh.; *R. scaberrimum* Lin-
gelsh.; *Polygonum taliense* Lingelsh.; *P. Limprichtii* Lingelsh.; *P. Huberti* Lingelsh.; *P. rus-*
cinatum Hamilt. var. *exauriculatum* Lingelsh.; *P. Forestii* Diels var. *Pumilio* Lingelsh.; *M-*
landryum apertum Pax & K. Hoffm.; *Silene batangensis* Limpr. f.; *S. dawoensis* Limpr. f.; *Gypso-*
phila tschiliensis J. Krause; *Stellaria viridiflora* Pax & K. Hoffm.; *Cerastium Limprichtii* Pax
 & K. Hoffm.; *Arenaria rhodantha* Pax & K. Hoffm.; *A. dsharaensis* Pax & K. Hoffm.; *A. Grün-*
ingiana Pax & K. Hoffm.; *A. velutina* Pax & K. Hoffm.; *Trollius yunnanensis* Ulbr.; *Isopyrum*
Limprichtii Ulbr.; *Paraquilegia anemonoides* Ulbr. (*Aquilegia anemonoides* Willd.); *Clematis*
Limprichtii Ulbr.; *C. chrysantha* Ulbr.; *C. ornithopus* Ulbr.; *Ranunculus petrogeiton* Ulbr.
R. Limprichtii Ulbr.; *Berberis dawoensis* Kurt Meyer; *Epimedium membranaceum* Kurt Meyer
E. platypetalum Kurt Meyer; *Schizandra vestita* Pax & K. Hoffm.; *Lindera Limprichtii* H.
 Winkl.; *L. Paxiana* H. Winkl.; *Dilophia macrosperma* O. E. Schulz; *Platycraspedum* O. E.
 Schulz, n. gen. of the Cruciferae; *P. tibeticum* O. E. Schulz; *Aphragmus tibeticus* O. E. Schulz
Eutrema compactum O. E. Schulz; *Draba oreades* Schrenk var. *chinensis* O. E. Schulz; *Erysimum*
Limprichtii O. E. Schulz; *Torularia humilis* O. E. Schulz (*Sisymbrium humilis* C. A. Mey.)
Hesperis Limprichtii O. E. Schulz; *Loxostemon granuliferum* O. E. Schulz (*Cardamine tenui-*
folia Turcz. var. *granulifera* Franch.); *Sedum banlanense* Limpr. f.; *S. Dielsianum* Limpr. f.
Rodgersia platyphylla Pax & K. Hoffm.; *Saxifraga pallidiformis* Engl.; *S. lumpuensis* Engl.
S. gatogombensis Engl.; *S. macrostigmatoides* Engl.; *S. litangensis* Engl.; *S. dshagalensis* Engl.
S. tatsienluensis Engl.; *S. crassulifolia* Engl.; *Chrysosplenium tibeticum* Limpr. f.; *Parnassia*
rumicifolia Brieger; *Spiraea Limprichtii* J. Krause; *Rubus Limprichtii* Pax & K. Hoffm.; *R.*
minensis Pax & K. Hoffm.; *Potentilla eriocarpoides* and var. *glabrescens* J. Krause; *P. Lim-*
prichtii J. Krause; *Sibbaldia pentaphylla* J. Krause; *Chamaerhodos canescens* J. Krause; *C. mi-*
crantha J. Krause; *Geum oligocarpum* J. Krause; *Rosa Limprichtii* and var. *subumbellata* Pax &
 K. Hoffm.; *Rosa dawoensis* Pax & K. Hoffm.; *R. tsinlingensis* Pax & K. Hoffm.; *Caragana Lim-*
prichtii Harms; *Astragalus pratensis* Ulbr.; *A. degensis* Ulbr.; *A. luteus* Ulbr.; *A. pseudoxy-*
tropis Ulbr.; *Gueldenstaedtia tongolensis* Ulbr.; *Hedysarum Limprichtii* Ulbr.; *H. pseudastragalus*
 Ulbr.; *Desmodium tiliifolium* Don var. *Potaninii* Schindl.; *Geranium batangense* Pax & K. Hoffm.;
G. refractoides Pax & K. Hoffm.; *Euphorbia shetoensis* Pax & K. Hoffm.; *E. Riae* Pax & K.
 Hoffm.; *E. szechuanica* Pax & K. Hoffm.; *Acer Schneiderianum* Pax & K. Hoffm.; *Sageretia*
horrida Pax & K. Hoffm.; *S. tibetica* Pax & K. Hoffm.; *Viola grypceras* Gray var. *barbata* W.
 Beckr.; *Begonia Limprichtii* Immsch.; *Wikstroemia rosmarinifolia* H. Winkl.; *W. eriophylla*
 H. Winkl.; *W. Paxiana* H. Winkl.; *Daphne Grueningiana* H. Winkl.; *D. Limprichtii* H. Winkl.;
D. flaviflora H. Winkl.; *D. szetschuanica* H. Winkl.; *Pleurospermum Limprichtii* Wolff; *P.*
tibeticum Wolff; *P. nubigenum* Wolff; *Sinolimprichtia* Wolff, n. gen. of the Umbelliferae; *S.*
alpina Wolff; *Carum delicatulum* Wolff; *Pimpinella? Limprichtii* Wolff; *Cnidium Limprichtii*
 Wolff; *C. affine* Wolff; *Ligusticum Limprichtii* Wolff; *Helwingia crenata* Lingelsh.; *Symplocos*
Limprichtii H. Winkl.; *Ligustrum Ibota* Sieb. var. *subcoriaceum* Koehne & Lingelsh.; *Jas-*
minum tsinlingense Lingelsh.; *J. violacens* Lingelsh.; *Buddleia praecox* Lingelsh.; *Gentiana*
tsinlingensis Limpr. f.; *G. macrophylla* Pall. var. *albo-lutea* Limpr. f.; *G. Schlechteriana* Limpr.
 f.; *Sweetia obtusipetala* Gruning; *Trachelospermum cathayanum* C. Schneid. var. *longipedi-*
cellatum Lingelsh.; *Cynanchum Limprichtii* Schltr.; *Porana lutingensis* Lingelsh.; *Tournefortia*
sibirica L. var. *grandiflora* H. Winkl.; *Eritrichium Riae* H. Winkl.; *Clerodendron yatschuen-*
se H. Winkl.; *Ajuga calantha* and var. *angustifolia* Diels; *Scutellaria spectabilis* Pax & K. Hoffm.;
S. pachyrrhiza Pax & K. Hoffm.; *S. purpureo-coerulea* Pax & K. Hoffm.; *Dracocephalum pedun-*
culatum (Hemsl.) Diels; *Chelonopsis albiflora* Pax & K. Hoffm.; *Salvia pogonochila* Diels; *Aniso-*

caulescens (*Mandragora caulescens* Clarke); *Veronica eriogyne* H. Winkl.; *V. Riae* E. Winkl.; *Pedicularis Dielsiana* Limpr. f.; *P. Paxiana* Limpr. f.; *Didissandra leucantha* Diels; *Strobilanthes Limprichtii* Diels; *Leptodermis pilosa* Diels var. *microphylla* H. Winkl.; *L. nigricans* H. Winkl.; *L. Limprichtii* H. Winkl.; *Galium asperulopsis* H. Winkl.; *Leycesteria Limprichtii* H. Winkl.; *Lonicera ericoides* Pax & K. Hoffm.; *L. penduliflora* Pax & K. Hoffm.; *L. Limprichtii* Pax & K. Hoffm.; *Valeriana pseudodioica* Pax & K. Hoffm.; *Pterocephalus batangensis* Pax & K. Hoffm.; *Adenophora tsinlingensis* Pax & K. Hoffm.; *A. liliifolioides* Pax & K. Hoffm.; *A. reticulata* Pax & K. Hoffm.; *Codonopsis tsinlingensis* Pax & K. Hoffm.; *Wahlenbergia cylindrica* Pax & K. Hoffm.; *W. monantha* H. Winkl.; *Aster Limprichtii* Diels; *A. poliothamnus* Diels; *Linaphalis Souliei* Diels; *Doronicum Limprichtii* Diels; *Stereosanthus hieraciifolius* Diels; *Senecio lamarum* Diels; *S. Limprichtii* Diels; *Cremanthodium Limprichtii* Diels; *C. stenactium* Diels; *Saussurea acropilina* Diels; *S. aegiophylla* Diels; *S. calobotrys* Diels; *S. geraecephala* Diels; *S. hypsipeta* Diels; *S. Limprichtii* Diels; *S. Paxiana* Diels; *S. piliniphylla* Diels; *S. poophylla* Diels; *S. Stolzneriana* Diels; *S. tatsienensis* Bur. & Franch. f. *monocephala* Diels; *Ainsliaea hypoleuca* Diels; *A. mollis* Diels; and *Taraxacum platyepidum* Diels.—R. E. Woodson, Jr.

9707. LIMPRICHT, W. Neue *Pedicularis* aus Ost-Tibet. I. [New *Pedicularis* from eastern Tibet.] Repert. Spec. Nov. Regni Veg. 18: 243-244. 1922.—The following new species are described and new name proposed: *Pedicularis lamarum*, *P. cyathophylloides*, *P. Lingelheimiana*, and *P. angustiflora* n. name.—J. M. Greenman.

9708. LINDAU, G. Acanthaceae austro-americanae. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 245-247. 1922.—Seven new species are described. These are: *Aphelandra luyensis*, *Beloperone sessilifolia* and *B. Weberbaueri*, and *Jacobinia Weberbaueri* collected in Peru by Weberbauer; and *Duvernoia glabrata* collected in Brazil by Dusen.—F. W. Pennell.

9709. LINDAU, G. Eine neue *Aphelandra*-Art. [A new species of *Aphelandra*.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 50. 1921.—*Aphelandra dusenii* (Acanthaceae), Brazil, is described as new to science.—F. W. Pennell.

9710. LINDAU, G. Neue Gattungen der Acanthaceen. [New genera of Acanthaceae.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 142-144. 1922.—Two new genera and 3 new species of Acanthaceae are described from South America. These are *Syringidium atropurpureum* and *Kalbreyeriella rostellata* n. gen. et n. spp., from Colombia; and *Habracanthus macrolobus* n. sp., from Peru.—F. W. Pennell.

9711. LOESENER, T. Mexicanische und zentralamerikanische Novitäten. VII. [Mexican and Central American novelties. VIII.] Repert. Spec. Nov. Regni Veg. 18: 347-363. 1922.—This article continues the author's enumeration of Mexican and Central American plants from numbers 431 to 553 inclusive. The following new species and varieties are described: *Bouvardia Endlichii*, *B. flos Joannis* K. Schum. var. *latifolia*, *Randia Tomatillo*, *Guettarda scabra* Lam. var. *Seleriana*, *Chiococca racemosa* Jacq. var. *yucatanica*, *Psychotria limonensis* Krause var. *laxinervia*, *Richardsonia tetracocca* (Hemsl.) K. Schum. var. *calvescens*, and *Crusea rosea*.—J. M. Greenman.

9712. LOESENER, T. Über einen neuen *Rhynchanthus*. [A new *Rhynchanthus*.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 46-50. 1921.—*Rhynchanthus wiesemannianus* Loes. & Schlecht. n. sp. (Zingiberaceae) is described and its relationships discussed. This plant was cultivated in the botanical garden at Bonn, Germany; the native country is not known.—F. W. Pennell.

9713. MALME, GUST. O. A.N. Die *Xyridazeen* der Insel Cuba. [Xyridaceae of Cuba.] Ark. för Bot. 19¹⁹: 1-6. 1925.—*Xyris intermedia* and *X. Ekmanii* are described as new.—O. Heilborn.

9714. MALME, GUST. O. A.N. Xyridologische Beiträge. [Xyridologic contributions.] Ark. för Bot. 19¹⁸: 1-8. 3 fig. 1924.—*Xyris connectens*, *X. paulensis*, *X. Dusenii* and *Abolboda abbreviata*, all from Brasil, are new. A key of the genus *Abolboda* is given.—O. Heilborn.

9715. MARKGRAF, FR. Apocynaceae Brasilienses, a cl. F. C. Hoehne communicatae, determinatae. [Determinations of Brazilian Apocynaceae communicated by F. C. Hoehne.] Repert. Spec. Nov. Regni Veg. 20: 18-26. 1924.—A list of determinations is compiled, including the following new combination: *Odontadenia lutea* (*Echites lutea* Vell.).—R. E. Woodson, Jr.

9716. MARKGRAF, F. Eine neue Oleaceae aus Peru. [A new species of Oleaceae from Peru.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 219-220. 1922.—*Menodora pulchella* collected by Fiebrig in Bolivia in 1904, is described.—F. W. Pennell.
9717. MATTFELD, J. Compositae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 235-237. 1922.—*Felicia globularioides* and *Stoebe elgonensis* are described, both collected by G. Lindblom in 1920.—F. W. Pennell.
9718. MATTFELD, J. Compositae novae Africanae. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 176-181. 1922.—Seven new species of Compositae are described, all collected by Klingenberg in South Africa in 1895 and 1896. They are *Berkheyopsis brevisquama*, *Geigeria filifolia*, *Felicia bechuanica*, *Pechuel-Loeschea sericea*, *Pluchea integrifolia*, *Senecio klingbergii*, and *Tripteris gweloensis*.—F. W. Pennell.
9719. MATTFELD, JOH. Compositae novae Austro-Africanae. I. Repert. Spec. Nov. Regni Veg. 17: 392-395. 1921.—The following new species and new combination are proposed: *Felicia nana*, *F. Prageri*, *Nolletia tenuifolia*, *Geigeria chenopodiifolia*, and *N. gariepina* (*Nidella gariepina* DC.).—J. M. Greenman.
9720. MATTFELD, JOH. Eine neue *Luzula* aus Uruguay. [A new *Luzula* from Uruguay.] Repert. Spec. Nov. Regni Veg. 17: 438. 1921.—*Luzula campestris* DC. var. *Osteni* is described as a new variety from Uruguay.—J. M. Greenman.
9721. MATTFELD, J. Zwei neue Orobanchen aus Peru. [Two new Orobanches from Peru.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 182-186. 1922.—Two new species of *Orobanche*, *O. tacnaensis* and *O. Weberbaueri*, are described from Peru, and a key is given to the 4 South American species.—F. W. Pennell.
9722. MATTFELD, JOH., ET GEORG BITTER. Genus *Tunaria* O. K. e Solanaceis excludendum (= *Cantua pirifolia* Juss.). Repert. Spec. Nov. Regni Veg. 18: 299-300. 1922.
9723. MEDELIUS, S. *Epilobium hirsutum* × *palustre* i Skåne. [*Epilobium hirsutum* × *palustre* in Scania (province in Sweden).] Svensk Bot. Tidskr. 19: 523. 1925.
9724. MELCHIOR, H. *Violacea novae cubensis*. Repert. Spec. Nov. Regni Veg. 21: 262-264. 1 pl. 1925.—The following new species from Cuba is described in detail and illustrated: *Hybanthus Urbanianus*.—R. E. Woodson, Jr.
9725. MEYER, KURT. Kulturgeschichtliche und systematische Beiträge zur Gattung *Prunus*. [History of culture and systematics of the genus *Prunus*.] Repert. Spec. Nov. Regni Veg. Beihefte 22: 1-64. 3 pl. 1923.
9726. MEZ, C. Drei neue Gramineen aus Papuasien. [Three new grasses from Papuasien.] Repert. Spec. Nov. Regni Veg. 18: 26-27. 1922.—The following new species are described: *Digitaria longissima*, *Garnotia Mezii* Janowski, and *Aristida Loheri*.—J. M. Greenman.
9727. MILDBRAED, J. Campanulaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 235. 1922.—*Lobelia lindblomii* is described, collected by Lindblom in 1920.—F. W. Pennell.
9728. MILDBRAED, J. Crassulaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 227-228. 1922.—*Crassula granvikii* and *C. phyturus* are described, the former collected by Granvik and the latter by Lindblom.—F. W. Pennell.
9729. MILDBRAED, J. Ericaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 232. 1922.—*Philippia elgonensis* is described, collected by G. Lindblom in 1920.—F. W. Pennell.
9730. MILDBRAED, J. Gentianaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 233. 1922.—*Swertia uniflora* is described, collected by Granvik.—F. W. Pennell.
9731. MILDBRAED, J. *Morus lactea* (Sim) Mildbr. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 243-244. 1922.—*Celtis lactea* Sim of East Africa is shown to be actually a species of *Morus*.—F. W. Pennell.

9732. MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 223-242. 1922.—New species are described in Orchidaceae by R. SCHLECHTER; in Crassulaceae, Rosaceae, Eriaceae, Gentianaceae, Scrophulariaceae, Valerianaceae and Campanulaceae by J. MILDBRAED; in Leguminosae by H. HARMS; in Umbelliferae by H. WOLFF; and in Compositae by J. MARTRELD. These plants were mostly collected by G. Lindblom in 1920, but a few were gathered by Granvik; all are recounted under the several contributing authors.—To this is added a section by J. Mildbraed, Bemerkungen über die Pflanzenwelt des Elgon [Remarks on the plant-world of the Elgon], giving a detailed view of the vegetation of this mountain.—F. W. Pennell.

9733. MILDBRAED, J. Neue Homalium-Arten aus Westafrika. [New species of Homalium from West Africa.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 172-175. 1922.—Four new species of *Homalium* are described, all collected by the author in Kamerun. They are *H. adenostephanum*, *H. hypolasium*, *H. platypleurum*, and *H. serrifolium*.—F. W. Pennell.

9734. MILDBRAED, J. Neue und bemerkenswerte Waldbäume aus Kamerun. [New and remarkable forest trees from Kamerun.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 53-62. 1921.—The following are proposed as new to science: *Magnistipula cupheiflora* (Rosaceae), *Ochna calodendron* (Ochnaceae), *Parinarium iodocalyx* (Rosaceae), *Phyllocosmus calothyrsus* (Linaceae), *Pteleopsis hylodendron* (Combretaceae), *Xylopia cupularis* and *X. phloiodora* (Anonaceae). A new combination is made in *Holoptelea*, and notes are given on species of *Morus* and *Oldfieldia*.—F. W. Pennell.

9735. MILDBRAED, J. Plantae novae Kamerunenses. I. [New plants of Kamerun. I.] Repert. Spec. Nov. Regni Veg. 18: 96-98. 1922.—The following new species are described: *Rinorea hirtella*, *R. lepidobotrys*, *Iodes trichocarpa*, and *Cordia perbella*.—J. M. Greenman.

9736. MILDBRAED, J. Rosaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 228. 1922.—*Alchemilla johnstonii lindblomiana* and *A. elgonensis* are described as new, both collected by Lindblom in 1920.—F. W. Pennell.

9737. MILDBRAED, J. Scrophulariaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 233-234. 1922.—*Lindernia subscaposa* is described, collected by G. Lindblom in 1920.—F. W. Pennell.

9738. MILDBRAED, J. Valerianaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 234-235. 1922.—*Valeriana elgonensis* is described, collected by Granvik.—F. W. Pennell.

9739. MILDBRAED, J. Zur Kenntnis der Senecio-Bäume der afrikanischen Hochgebirge. [Contribution to the knowledge of the high mountain tree—Senecios of Africa.] Repert. Spec. Nov. Regni Veg. 18: 227-232. 1922.—Notes on *Senecio Johnstoni* Oliver and *S. Eriici Rosenii* R. E. Fr. & Th. Fr. Jr. are recorded. The following new species and variety are described: *S. Kilimanjari*, *S. Eriici Rosenii* var. *alticola*, and *S. Friesiorum*.—J. M. Greenman.

9740. MOLFINO, JOSÉ F. Notas botánicas. [Botanical notes.] II. Physis 7: 89-105. 1923.—These notes comprise 100 first- or little-mentioned species of plants from northern and northwestern Argentina. These are compiled from various sources which are stated with each entry, as also are the citations for specimens seen. The only new combination, as well as the only species accompanied by description, is *Picraena palo-amargo* (Speg.) Speg. (*Picrasma palo-amargo* Speg.). This was contributed by C. Spegazzini.—F. W. Pennell.

9741. MOLFINO, JOSÉ F. "Physostemon," un nuevo genero de Capparidaceas para el pais. ["Physostemon," a new genus of Capparidaceae for the country.] Physis 7: 53. 1923.—The first occurrence of *Physostemon lanceolatum* Mart. & Zucc. in Argentina is reported, and a description of the plant given.—F. W. Pennell.

9742. NEITSCH, E. Die morphologische Natur der Ranken der Cucurbitaceen. [The morphological nature of the tendrils of the Cucurbitaceae.] Repert. Spec. Nov. Regni Veg. Beihefte 18: 1-50. 7 pl. 1923.

9743. NILSSON, GUNNAR. En sällsynt formförändring av *Lamium album* L. [A rare form of *Lamium album* L.] Svensk. Bot. Tidskr. 19: 521-522. 1 fig. 1925.—This form has entire, not serrate, leaves (f. *integrifolium* Nolte).—O. Heilborn.

9744. NOVÁK, FRANT. A. *Kritische Betrachtungen über den Formenkreis der Silene longiflora* Ehrh. Beih. Bot. Centralb. Abt. II, 40: 410-420. 1924.—The following are described as new: *Silene longiflora* Ehrh. f. *persica* from Persia, f. *ramosa*, var. *scabra*, f. *latifolia* and f. *simplex* from Bulgaria.—*Frederick V. Rand.*
9745. NOVÁK, FRANT. A. *Plantae Bohemicae rariores vel minus cognitae*. Otisk Sborniku Klubu Přírodovědeckého v Praze 1921-1922: 1-7. 1922.
9746. OSTENFELD, C. H. *Contributions to Australian botany. Part III: Additions and notes to the flora of extra-tropical W. Australia. 144 pp.* Det. Kgl. danske Videnskabernes Selskab. Biologiske Meddel. 3²: 1-144. 1921.—An enumeration of plants from extra-tropical West Australia collected by the author and other botanists, containing several new species and varieties and dealing critically with many of the already known species and referring to the earlier parts of the same publication (Dansk Botanisk Arkiv 2⁶: 1916; and Ibid. 2⁸: 1918). For many of the species biological dates are given and discussed, as well as geographical distribution. The plates and many of the figures in the text are photographs. The new species, varieties and combinations are, alphabetically: *Adenanthos intermedius* Ostf., *Anigozanthos Manglesii* D. Don var. *flavescens* Ostf. and var. *virescens* Ostf., *Agrostocrinum scabrum* (R. Br.) Ostf., *Bartlingia paleacea* (F. v. Müll.) Ostf., *Caladenia Gertrudae* Ostf., *Calamagrostis filiformis* (Forst.) Pilger var. *Preisii* (Nees) Pilger, *Calotis multicaulis* (Turez.) Ostf., *Centrolepis basiflora* Ostf., *Chamaescilla versicolor* (Lindl.) Ostf., *Conostylis juncea* Endl. var. *involutrata* (Endl.) Ostf., *Dianella revoluta* R. Br., var. *brevicaulis* Ostf., *Diplolaena Andrewsii* Ostf., *D. Drummondii* (Benth.) Ostf., *Eremophila angustifolia* (Sp. Moore) Ostf., *E. decipiens* Ostf., *E. glabra* (R. Br.) Ostf., *Helipterum australe* (A. Gray) Ostf., *H. pygmaeum* (D.C.) Benth. var. *Drummondii* (A. Gray) Ostf., *H. roseum* (Hook.) Benth. var. *nigropapposum* Ostf., *H. variabile* (Sond.) Ostf., *Hibbertia inconspicua* Ostf., *H. pulchra* Ostf., *H. subvaginata* (Steud.) Ostf., *Juncus planifolius* R. Br., var. *humilis* Ostf., *Leucopogon amplexans* Ostf., *Loranthus linophyllus* Fenzl var. *Preisii* (Miq.) Ostf., *Luzula migrata* (Buchenau) Ostf., *Lysinema ciliatum* R. Br. var. *ericoides* Ostf., *Macropodia fuliginosa* (Hook.) Ostf., *Marianthus gracilis* Ostf., *Oxylobium lanceolatum* (Vent.) Ostf., *Pimelea imbricata* R. Br. var. *nana* (Grah.) Ostf., *Pteronia australia* Hutchinson, *Scaevola paludosa* R. Br. var. *repens* (De Vriese) Ostf., *Siloxerus filifolius* (Benth.) Ostf., *S. strictus* (Steetz) Ostf., *S. tenellus* (F. v. Müll.) Ostf., *S. tomentosus* (Wendl.) Ostf., *Simsia latifolia* R. Br. var. *gracilis* Ostf., *Sollya fusiformis* (Labill.) Ostf., *Stylidium spathulatum* R. Br. var. *obovatum* Ostf., *Tetragonia eremaea* Ostf., *Tetralthea platycaula* (Benth.) Ostf., *Thryptomene Davisiae* Diels, *Trymalium spathulatum* (Labill.) Ostf., *Velleia pilosella* (De Vriese) Ostf., *Westringia rigida* R. Br. var. *brachyphylla* (Diels) Ostf., and var. *dolichophylla* (Diels) Ostf., *Xanthosia candida* Steud. var. *subtrilobata* Ostf., *Zygophyllum eremaeum* (Diels) Ostf.—*K. G.*
9747. PELLEGRIN, FRANCOIS. *Une intéressante variété nouvelle d'Indigotier africain. [An interesting new variety of an African indigo.]* Bull. Soc. Bot. France 72: 537-539. 1925.—*Indigofera asparagoides* Taubert var. *Tisseranti* is described as new. This variety is similar in vegetative organs and inflorescence to the species. It is distinguished by the fruits. It was collected in French Central Africa by Père Tisserant, who also got the typical plant which inhabits Nyassa and Uganda.—*R. Douin (transl. by E. B. Payson).*
9748. PERKINS, JANET. *Die afrikanischen Achyrospermum-Arten. [The African species of Achyrospermum.]* Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 78-82. 1921.—This paper presents a summary, with synonymy and citation of specimens, of the African species of *Achyrospermum* (Labiatae). It includes 3 new species: *A. dasytrichum* and *A. erythrobotrys* from Kamerun; and *A. swina* from Nyassa-land.—*F. W. Pennell.*
9749. PERRIER DE LA BÂTHIE, H. *Nouvelles remarques sur les Chlaenacées. [Novelties observed in the Chlaenaceae.]* Bull. Soc. Bot. France 72: 307. 1925.—*Sarcolaena codonochlamys* Baker abounds on the hills of the region around Samirano. Its fruit, still undescribed, is enclosed in a fleshy, sweet involucre. The seed are borne in a mass of irritating hairs which render the fruit disagreeable to eat in spite of its excellent odor of apple. The author gives the distinctive characteristics of the genera *Rhodolaena* and *Schizolaena*. *Rhodolaena parviflora* Gerard is put back into the genus *Schizolaena* and *S. microphylla* is described as new. It grows in the forests of the western slopes of the southern part of the central region, as well as

to the south of Ambatofinandrahana and on Isalo. The genera *Sarcoclaena*, *Kerochlamys*, *Leptolaena* and *Schizolaena* have a calyx of 3 sepals, tardily opening. In *Rhodolaena*, *Xilvolaena* and *Eremolaena* these 3 sepals are accompanied by 2 external parts which the author supposes to be sepals. In this case these 3 genera constitute an intermediate link between the genera with 3 sepals and with *Pantachlaena*, which has 5. The author bases this opinion on the fact that in a variation of *Xiloclaena Richardi* the flower is pedicelled in the involucre and this elongation of the lower internode does not modify at all the position of the external parts which rest at the base of the other sepals. The author describes the fruit of *E. Hunblotiana*, which has fleshy, white bracts which are edible. These distinguish this species from all other species of the Chlaenaceae. To the 2 species already known is added the diagnosis of 1 new species, *E. boinensis*, which grows in the region west of where the Chlaenaceae are almost absent. A more complete knowledge of the fruit will probably lead to the consideration of this plant as belonging to a new genus.—*L. Faucheron (transl. by E. B. Payson)*.

9750. PFEIFFER, H. *Additamenta ad cognitionem generis Lagenocarpus*. III. Repert. Spec. Nov. Regni Veg. 18: 72-93. 1922.—The following new species, varieties, names and combinations are included: *Lagenocarpus Sprucei*, Brazil; *L. guianensis* Lindl. vars. *typicus* and *paraensis*; *L. tremulus* Nees var. *brevifolius* (*Cryptangium brevifolium* Bcklr.); *L. Warmingii*, Brazil; *L. scalariformis*, Brazil; *L. rigidus* Nees var. *arundinaceus* (*Cryptangium arundinaceum* Bcklr.); *L. Dusenii*, Brazil; *L. giganteus*, Brazil; *L. sericeus*, Brazil; *L. albo-niger* C. B. Clarke var. *subglabra*, Brazil; *L. adamantinus* Nees var. *bracteosus*, Brazil; *L. lapaensis*, Brazil; *L. pauciflorus* Pfeiff. var. *triquetris* (*Cryptangium triquetrum* Bcklr.); *L. compositus*, Brazil; *L. Glaziovii* Pfeiff. var. *pyramidalis*, Brazil; *L. strictus* (*Scleria stricta* Kth.); *L. strictus* var. *leptocladus* (*S. leptocladia* Poepp.) and var. *junciformis* (*S. junciformis* Kth.); *L. Minarus* O. Ktze. var. *paucifolius*, Brazil; *L. Clausseni* (*Cryptangium Clausseni* C. B. Clarke); *L. parvulus* (*C. parvulum* C. B. Clarke); *L. polyphyllus* O. Ktze. vars. *typicus*, *itaiyayus*, and *gangelioneus* from Brazil; *L. Clarkei* (*C. strictum* C. B. Clarke, not *L. strictus* O. Ktze.); and *L. Dracaenula* (*C. Dracaenula* Bcklr.); and *L. nudipes* (*C. nudipes* C. B. Clarke).—*J. M. Greenman*.

9751. PFEIFFER, H. *Additamenta ad cognitionem generis Lagenocarpus*. V. Repert. Spec. Nov. Regni Veg. 21: 34-36. 1925.—The following new species and combination are described from Brazil: *Lagenocarpus ciponensis* and *L. amazonicus* (*Exochogyne amazonica* C. B. Clarke).—*R. E. Woodson, Jr.*

9752. PFEIFFER, H. *De novis et criticis speciebus generum saepe ignotorum Scleriearum*. Repert. Spec. Nov. Regni Veg. 18: 375-385. 1922.—The following new species and new combinations are included: *Becquerelia tuberculata* (*Scleria tuberculata* Bcklr.); *B. glomerulata* Brongn. var. *euglomerulata* f. *minuta* and f. *rubra*, var. *angustifolia* Bckl. f. *typica*, f. *minor*, and f. *scabrinuz*; *B. Martii* (*Calyptrocarya Martii* Nees) f. *typica* and f. *laxa*; *B. bicolor* (*C. bicolor* Nees) f. *ramosissima*, f. *verticillata*, and f. *humilis*; *B. bullata* C. B. Clarke & Pfeiff.; *Diplacrum monocephalum*; *Trilepis Lhotzkiana* Nees f. *robusta*; *T. eximia* (*Fintelmannia eximia* C. B. Clarke); and *T. microstachya* (*F. microstachya* C. B. Clarke).—*J. M. Greenman*.

9753. PFEIFFER, H. *Syntrinema genus novum Cyperacearum Brasiliensium*. Repert. Spec. Nov. Regni Veg. 21: 238-240. 1925.—The following new species is described in detail: *Syntrinema brasiliense* Radlk. & Pfeiff.—*R. E. Woodson, Jr.*

9754. PILGER, R. *Beiträge zur Kenntnis der Gattung Plantago*. [Contributions to our knowledge of the genus *Plantago*.] Repert. Spec. Nov. Regni Veg. 20: 12-16. 1924.—The following new species are described of the section *Mesembrynia*: *Plantago Pritzelii*, Australia; *P. acutiloba*, Tasmania; *P. Tildeniae*, Australia; and *P. Bakeri*, Australia.—*R. E. Woodson, Jr.*

9755. PILGER, R. *Die Arten der Plantago major-Gruppe in Ostasien*. [The species of the "Plantago major" group in eastern Asia.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 104-116. 1922.—A summary of the group of *Plantago major* in eastern Asia is presented, with keys to the species, and with synonymy, description, and citation of specimens for each species. As new to science are described, *P. centralis* and *P. schneideri* from China, *P. yezoensis* from Japan, and varieties of various other species.—*F. W. Pennell*.

9756. PILGER, R. *Drei neue andine Gräser*. [Three new Andean grasses.] Repert. Spec. Nov. Regni Veg. 17: 445-448. 1921. The following new species are described: *Arundinaria hirtula*, Peru; *Neurolepis Weberbaueri*, Peru; and *Bouteloua piurensis*, Peru.—*J. M. Greenman*.

Reching. *Repert. Spec. Nov. Regni Veg.* 22: 184-186. (*Repert. Eur. et Med.* 1: 808-810.) 1925.—The author thinks that *R. pannonicus* is a hybrid of *R. obtusifolius* and *R. Patientia* and not of *Patientia* and *stenophyllus*, and that *R. tricallosus* Borb. is a hybrid of *R. crispus* and *Patientia* (from Burgenland and Hungary), and that *R. stenophyllus* Ledeb. from Kelenföld is the plant determined by Borbas as *R. tricallosus*. *R. dacicus* is not from *recurvatus* × *stenophyllus* but from *obtusifolius* subsp. *silvester* × *recurvatus*.—John E. Dinsmore.

9766. RECHINGER, K. *Zwei neue Hybriden*. [Two new hybrids.] *Repert. Spec. Nov. Regni Veg.* 22: 186-187. (*Repert. Eur. et Med.* 1: 810-811.) 1925.—A description in Latin is given of *Euphorbia Peisonis* n. hyb. (*E. Cyparissias* L. × *salicifolia* Host.), from Burgenland; and of *Onobrychis versurarum* n. hyb. (*O. arenaria* Ser. × *viciaefolia* Scop.), from Lower Austria.—John E. Dinsmore.

9767. REYNIER, ALFRED. *Examen de la valeur, en biologie et systematique, du Mercurialis annua* L. "variété camberiensis" Chabert. [Examination of the value in biology and taxonomy of *M. annua* L. "variety camberiensis" Chabert.] *Bull. Soc. Bot. France* 72: 594-600. 1925.—The author discusses the value of the "variety camberiensis" of *Mercurialis annua*. Aside from the relatively considerable length of 8 cm. and the filiform nature of the leafless pedunculate branches on which the ovaries are borne, nothing in this plant justifies the creation of a valuable variety. On the other hand, the author believes that it is due to an injury that M. Chabert has made a connection between the pistillate stalks of this variety *camberiensis* and those of *M. Huetii* Harry.—A. Tronchet (transl. by E. B. Payson).

9768. REYNIER, ALFRED. *Pistacia Saportae-Marioni* Reyn. hybride hypothetique. *Bull. Soc. Bot. France* 72: 1099-1103. 1925.—This note is a reply to an article by Louis Emberger announcing the discovery at Montpellier of *Pistacia Saportae* Burnat. Reynier recalls a study which he made in 1905 upon a supposedly hybrid *Pistacia* and to the doctorate thesis of Alfred Sarton, in which 16 pages and a plate are devoted to histological comparisons of the stem and leaves of *Terebenthe* and *Lentisque* and their varieties to his *Pistacia Saportae* Marioni.—H. des Gayets (transl.).

9769. RIDLEY, H. N. *Plants from Bencoolen, Sumatra*. *Kew Bull.* 1925: 76-94. 1925.—This is an extended, annotated list of plants collected by C. J. Brooks. The following new species are described: *Neckia grandifolia*; *Xanthophyllum flavum*; *Impatiens tricolor*; *Glycosmis rubiginosus*; *Santhiria brachystachys*; *Eugenia biniflora*; *Melastoma velutinsum*; *Pomatostoma cirrhiferum*; *Begonia tenericaulis*; *Lyonsia sumatrana*; *Hoya Brooksii*; *Lettsonia parviflora*; *Didymocarpus violascens*; *Sphinctacanthus viridiflorus*; *Clerodendron Brooksii*; *Aristolochia glaucifolia*; *Glochidion Brooksii*; *Trigonostemon longisepala*; *T. Beccarii*; *Macaranga Brooksii*; *Elatostemma sylvanum*; *Dendrobium roseo-striatum*; *Bulbophyllum subverticillatum*; *Elettariopsis aquatilis*; *Pothos longipedunculata*; and the variety *Argostemma involucrata sumatrana*. The article concludes with a short account of the mosses by H. N. Dixon.—T. J. Fitzpatrick.

9770. RIENCOURT DE LONGPRÉ, P. DE. *Apports pour la classification des variétés d'Anthyllis Vulneraria* (Linné). *Examens préparatoires. Valeur de la coloration du calice*. [Materials for the classification of varieties of *Anthyllis Vulneraria* L. Preliminary examination. Value of the color of the calyx.] *Bull. Soc. Bot. France* 72: 9-18. 1922.—The author has sought to discover the cause of the calyx coloring of *Anthyllis Vulneraria*, and the value that may be given to this character in classification. The coloring substance occurs almost entirely in the veins. It is only where the smallest veins disappear that the coloring penetrates into the cells. The coloring matter is brought in by the veins, filters into the cells and invades the protoplasm. If the sap is not red, it is because the acid color is there in such small quantity that it is not noticeable. If it is visible at the extremity of the calyx, it is because of accumulation of this substance, the sap being there at the end of its course. This material is only a waste product carried by the sap. This condition is due to the fact that the calyx, having reached its growth, may be invaded without power to eliminate the invading material. If the petals are not invaded at the same time by this color, it is because the tissue of the petals has a greater vitality and is still in the course of its development. The color of the calyx is determined by the chemical nature of the soil. The systematic value of this character has a real importance in the delimitation of subvarieties and of very definite forms, for the effect of

the substratum does not alone produce a modification in the individual but shows an intimate tenacious quality common to individuals living in the same conditions, which is the impression of a sociological equilibrium which they have attained; but this ecological mark is not capable of showing the natural grouping of the forms of a species. It is impossible to think of using the degree of coloration of the sepals as an important characteristic if one wishes to effect a reasonable and secure taxonomy of *Anthyllis Vulneraria*.—*Henri des Gayets* (transl. by E. D. Payson).

9771. RILEY, L. A. M. Critical notes on Galapagos plants. *Kew Bull.* 1925: 216-231. 1925.—A history is given of previous botanical explorations. Annotations are made on the material collected during July and August, 1924. The following species and subspecies are described as new: *Polygala Sancti-Georgii*, *Acacia insulae-Iacobi*, *Dalea tenuicaulis* Hook. f. var. *goniocymbe*, *Scalesia Stewartii*, *Tournefortia pubescens* Hook. f. var. *Bauri*, and *Lycopersicon Cheesmanii*.—*T. J. Fitzpatrick*.

9772. RILEY, L. A. M. Critical notes on Trinidad plants. *Kew Bull.* 1925: 133-142. 1925.—The author annotates 57 species. The flora is mainly a northern and eastern extension of the floras of British Guiana and Venezuela. The following new forms are described: *Dioscorea pteryx Marshalliana*; *Tournefortia trinitatis*; *Acnistus punctatus*; and *Alchornea triplinervia* (Spreng.) Muell. Arg. var. *trinitatis*.—*T. J. Fitzpatrick*.

9773. SANZIN, RENATO. Las Cactaceas de Mendoza. [The Cactaceae of Mendoza.] *Rev. Chilena Hist. Nat.* 25: 96-119. 12 fig. 1921.—The Cactaceae of Mendoza, Argentina, are enumerated, with analytical keys to the genera and species, short descriptions, and summaries of distribution through Argentina.—*F. W. Pennell*.

9774. SCHINDLER, A. K. Desmodii generumque affinium species et combinationes novae. *Repert. Spec. Nov. Regni Veg.* 21: 1-21. 1925.—The following combinations, species, varieties, and subvarieties are listed and described: *Desmodium wolohoense*, China; *D. mandschuricum* (*D. podocarpum* var. *mandschuricum* Maxim.), China, southeastern Siberia; *D. szechuense* (*D. podocarpum* var. *szechuense* Craib), China, Japan; *D. microphyllum* (Thunb.) DC. var. *macrocarpum*, Bengal, Nepal; *D. Hannii*, Malay Peninsula; *D. Toppinii*, Burma; *D. heterocarpum* (L.) DC. var. *gymnocarpum*, Ceylon; *D. styracifolium* (*Hedysarum styracifolium* L.); *D. celebicum*, Celebes; *D. velutinum* (Willd.) DC. var. *Roxburghii* (Wight & Arn.), var. *Plukenetii* (Wight & Arn.), St. Vincent, Martinique; *D. sikkimense*, tropical Himalaya; *D. longibracteatum*, China, Burma; *D. ascendens* (Swartz) DC. f. *glabrescens*, Cuba, Colombia, Venezuela, and var. *trifoliolatum* (*D. trifoliolatum* Miq.), India; *D. Zenkeri*, Cameroon; *D. Stolzii*, Nyassaland; *D. frutescens* (*Hedysarum frutescens* Jacq.), var. *amblyophyllum* (Urb.), var. *angustifolium* (*D. incanum* var. *angustifolium* Griseb.), var. *nemosum* F. Muell. var. *simplex* subvar. *eboracense*, South Australia, and var. *Whitfordii*, Philippine Islands; *D. tenax*, tropical Australia; *Alysicarpus Gamblei*, Hindostan; *A. Hendersonii*, Burma; *A. ferrugineus* (Steud.) Hochst. & Steud. var. *Quartinianus* (*A. Quartinianus* Rich.), tropical Africa; *A. glumaceus* (*Hedysarum glumaceum* Roth.), Burma; *A. Prainii*, Burma; *A. violaceus* (*Hedysarum violaceum* Forsk.), var. *pilosus*, northern Africa, var. *Winkleri*, Mombassa; *A. Meeboldii*, Kashmir; *A. campylocaulis* (F. Muell.); *Uraria refescens* (*Desmodium rufescens* DC.); *U. cochinchinensis*, central India and eastern Asia; *U. Kurzii*, northwestern Malay Peninsula; *U. Henryi*, Burma; *U. cordifolia* (Wall.) Schindl. var. *Collettii* (*U. Collettii* Prain.); *Neocollettia Wallichii* (*Teramnus Wallichii* Kurz); *Arthroclanthus Balansae*, New Caledonia; *A. cuneatus*, New Caledonia; *A. tenuifolius*, New Caledonia; *A. Leratii*, New Caledonia; *A. coriaceus*, New Caledonia; *A. ovalifolius*, New Caledonia; *A. macrophyllus*, New Caledonia; *A. caudatus*, New Caledonia; *Leptodesmia monosperma* (*Desmodium monospermum* Bak.); *L. radiata* (*Desmodium radiatum* Bak.); *Lourea Zollingeri*, Java; *Lourea parviflora*, southwestern Malay Peninsula; *Campylotropis Schneideri*, China; *C. Rogersii*, northwestern Malay Peninsula.—*R. E. Woodson, Jr.*

9775. SCHINDLER, A. K. *Desmodium und Meibomia*. *Repert. Spec. Nov. Regni Veg.* 20: 136-155. 1924.—A discussion is given of the nomenclatural dispute of these 2 genera, of which the author favors the latter, and the following new species, varieties, and combinations are described: *Meibomia Hemsleyana* (*Desmodium amplifolium* Hemsl.); *M. Sumichrasti* (*D. strobilaceum* M. Mich., not Schlecht.); *M. Micheliana* (*D. madrense* M. Mich., not Hemsl.); *M.*

costaricensis (*D. uncinatum* M. Mich., not DC.); *M. pseudo-amplifolia* (*D. pseudo-amplifolium* M. Mich.); *M. cuspidata* (*Hedysarum cuspidatum* Muehlenb.); *M. Palmeri* (*Desmodium Palmeri* Hemsl.); *M. Palmeri* var. *latifolia*, Mexico and Central America; *M. Pringlei* (*D. Pringlei* S. Wats.); *M. subsessilis* (*D. subsessile* Schlechtd.); *M. amans* (*D. amans* S. Wats.); *M. Seleri*, Central America; *M. volubilis*, Mexico and Central America; *M. decipiens*, Mexico and Central America; *M. sericea* (*D. uncinatum* M. Mich., not DC.); *M. Hjalmarsonii*, Central America; *M. balaensis*, Ecuador; *M. Malmei* (*D. subsericeum* Malme); *M. subsericea* (*D. subsericeum* Malme); *M. pulchra* (*D. nitidum* M. Mich., not Mart. & Gal.); *M. Shusteri*, Mexico and Central America; *M. Karwinskii*, Mexico and Central America; *M. cubensis* (*D. cubense* Griseb.); *M. Langlasseana* (*D. Skinneri* M. Mich., non Benth.); *M. distorta* (*Hedysarum distortum* Aubl.); *M. prodiga*, Mexico and Central America; *M. guadalajarana* (*D. guadalajaranum* S. Wats.); *M. subsimplex* (*D. pachyrhizum* var. *subsimplex* Benth.); *M. subspicata* (*D. subspicata* S. Wats.); *M. glabrescens* (*D. glabrescens* Malme); *M. ramosissima* (*D. ramosissima* Arech.); *M. guarantica* (*D. asperum* var. *guaranticum* Chod. & Hassl.), Brazil, and var. *microcarpa*, Paraguay; *M. Hassleri* (*D. leiocarpum* Chod. & Hassl., not G. Don, not Benth.); *M. alba* (*D. discolor* Chod. & Hassl., not Vog., not Benth.); *M. discolor* (Vog.) O. Ktze. var. *PohlII*, Brazil; *M. abyssinica* (*Anarthrosyne abyssinica* Hochst.); *M. procumbens* (*Hedysarum procumbens* Mill.); *M. procumbens* var. *sylvatica* (*D. sylvaticum* Benth.); *M. tenella* (HBK.) O. Ktze. var. *longipes*, Central America; *M. Hoehneana*, Mexico and Central America; *M. Lilloana* (*M. spiralis* Hoehne); *M. humilis* (*D. spirale* var. *Bigelovii* Rob. & Greenm.); *M. parva* (*D. spirale* var. *Bigelovii* Rob. & Greenm.); *M. transversa* (*D. spirale* var. *transverum* Rob. & Greenm.); and *M. Canbyi*, Arizona.—R. E. Woodson, Jr.

9776. SCHINDLER, A. K. Über einige kleine Gattungen aus der Verwandtschaft von *Desmodium* Desv. [Some small genera related to *Desmodium* Desv.] Repert. Spec. Nov. Regni. Veg. 20: 266-286. 1924.—The following new species, varieties, and combinations are described: *Dicerma biarticulatum* (L.) DC. var. *Collettii*, Burma; *D. biarticulatum* var. *australiense*, Western Australia; *D. novaguineense*, New Guinea; *D. hispidum*, Burma; *Phyllodium elegans* (Lour.) Desv. var. *typicum*, Siam; *P. elegans* var. *javanicum*, Java; *P. longipes* (*Desmodium longipes* Craib); *P. grande* (*D. grande* Kurz); *P. insigne* (*D. insigne* Prain); *Pteroloma pseudotriquetrum* (*D. pseudotriquetrum* DC.); *P. alatum* (*D. alatum* DC.); *P. auriculatum* (*D. auriculatum* DC.); *P. Rodgeri*, Burma; *Droogmansia Ledermannii*, Kamerun; *D. Godefroyana* (*Meibomia Godefroyana* O. Ktze.); *Catenaria caudata* (*Hedysarum caudatum* Thunb.); *Hanslia adhaerens* (*H. adhaerens* Poir.); *Nephrodesmus macrobotryosus* (*Arthroclianthus macrobotryosus* Hochreut.); *N. parvifolius*, New Caledonia; *Dendrolobium quinquepetalum* (*Cytisus quinquepetalum* Blanco); *D. rostratum* (*Desmodium rostratum* Schindl.); *D. lanceolatum* (*Lespedeza lanceolata* Dunn); *D. baccatum* (*Desmodium baccatum* Schindl.); *D. ursinum* (*Desmodium ursinum* Schindl.); *D. rugosum* (*Desmodium rugosum* Prain); *D. Wallichii* (*Desmodium Wallichii* Prain); *D. triangulare* (*Hedysarum triangulare* Retz.); *D. cephalotoides* (*Desmodium cephalotoides* Craib); *D. olivaceum* (*Desmodium olivaceum* Prain); *D. Thorelii* (*Desmodium olivaceum* var. *Thorelii* Schindl.); *Codariocalyx gyrana* (L. f.) Hassk. var. *Roylei* (*Desmodium Roylei* Wight & Arn.); *Nephromeria Barclayi* (*Desmodium Barclayi* Benth.); *N. Painteri* (*Meibomia Painteri* Rose & Standl.); *N. albonitens* (*Rhynchosia albonitens* Lem. & Versch.); *N. lunata* (*Desmodium lunatum* Brandegees); *N. Poeppigiana*, Hylaea; *N. metalica* (*Meibomia metallica* Rose & Standl.); *N. Sodiroana* (*Desmodium Sodiroanum* E. Ulbrich), Ecuador; *N. axillaris* (*Hedysarum axillare* Swartz); *N. axillaris* var. *obtusifoliola* (*Meibomia axillaris* var. *obtusifoliola* O. Ktze.); *N. axillaris* var. *acutifoliola* (*Desmodium axillare* var. *acutifoliolum* Urb.); *N. axillaris* var. *Sintenisi* (*Desmodium axillare* var. *Sintenisi* Urb.); *Hegnara obcordata* (*Uraria obcordata* Miq.); *Campylotropis pinetorum* (*Lespedeza pinetorum* Kurz); and *C. velutina* (L. *velutina* Dunn).—R. E. Woodson, Jr.

9777. SCHINZ, HANS (Editor). Beiträge zur Kenntnis der afrikanischen flora (XXXI). [Contributions to the knowledge of the African flora (XXXI).] Vierteljahrsschr. Naturforsch. Ges. Zürich 68: 420-456. 1923.—Certain specialists, namely, FR. KRÄNZLIN, J. BÄR, and A. THELLUNG, have coöperated with the editor in the elaboration of this article. The following new species and combinations are included: *Eulophia amblypetala* Kränzln., *Polystachya Schinziana* Kränzln., *P. vulcanica* Kränzln., *Megaclinium hebetatum* Kränzln., *Listrostachys tenerrima* Kränzln.,

Pituranthos scoparius (Cosson & Dur.) B. & H. var. *rubellus* Thellung, *Oldenlandia amboënsis* Schinz, *O. natalensis* (Hochst.) var. *hirsuta* Bär, *O. neglecta* Schinz, *O. rufescens* Schinz, *O. xerophila* Schinz, *Houstonia trichotoma* Bär (*Oldenlandia trichotoma* Schinz), *Pentas transvaalensis* Bär, *Otiophora hirsuta* Bär, *O. densiflora* Bär, *Pentanisia prunelloides* Schinz (*Declieuxia prunelloides* Klotzsch) and var. *longifolia* Bär, *Galopina crocylloides* Bär, *Borreria squarrosa* Schinz, *Vernonia pseudo-corymbosa* Thell., *Blumea Kelleri* Thell., *B. somaliensis* Thell, *Nicolasia quinqueseta* O. Hoffm., *N. costata* Thell. (*Nolettia costata* Klatt), *Phymaspermum equisetoides* Thell., *Senecio pseudo-rhyncholaenus* and vars. *exauriculatus* and *auriculatus* Thell., *Dimorphotheca pseud-aurantiaca* Schinz & Thell., *D. flaccida* Thell. (*Calendula flaccida* Vent.), *D. pluvialis* \times *pseud-aurantiaca* = \times *D. turicensis* Thell., *Gerbera ambigua* (Cass.) Sch. Bip. vars. *typica*, *Kraussii*, *Gueinzii* and *cardiobasis* Thell., *G. glandulosa*, *G. Conrathii*, *Asteriscus graveolens* (Forskål) DC. vars. *genuinus*, *villosus* and *scaber*.—J. M. Greenman.

9778. SCHLECHTER, R. Beiträge zur Orchideenkunde von Colombia. [Contributions to knowledge of the orchids of Colombia.] Repert. Spec. Nov. Regni Veg. Beihefte 27: 1-183. 1924.—A short note is given on the source of the collections on which these contributions are based. The following new genus, species, combinations, and varieties are described: *Sobralia anceps*, *S. Hoppii*, *S. odorata*, *S. Schultzzei*, *Elleanthus ampliflorus*, *E. congestus*, *E. Hoppii*, *E. laetus*, *E. pastoensis*, *E. sphaerocephalus*, *E. venustus*, *E. vinosus*, *E. leiocaulon*, *Sertifera major*, *S. parviflora*, *Microstylis Hoppii*, *M. polyblephara*, *Liparis caloglossa*, *Masdevallia Hoppii*, *M. maculigera*, *Stelis Arevaloi*, *S. bracteata*, *S. cuculligera*, *S. elegantula*, *S. exilipes*, *S. Hoppii*, *S. longiracemosa*, *S. magnipetala*, *S. minimiflora*, *S. mirabilis*, *S. mocoana*, *S. mucronipetala*, *S. oligoblephara*, *S. pastoensis*, *S. petiolaris*, *S. pleistantha*, *S. ringens*, *S. robusta*, *S. scandens*, *S. umbriae*, *S. virgulata*, *S. Walteri*, *S. Wernerii*, *Pleurothallis Arevaloi*, *P. brachyantha*, *P. chachatoyensis*, *P. cymbisepala*, *P. Hoppii*, *P. Ineziae*, *P. lancifera*, *P. melittantha*, *P. mocoana*, *P. nubigena*, *P. pendula*, *P. phaeantha*, *P. pleiostachys*, *P. potamophila*, *P. raphidopus*, *P. ruscifolia* (Jacq.) R. Br. var. *caquetana*, *P. serricardia*, *P. spathilabia*, *P. Wernerii*, *Oclomeria longifolia*, *O. longerepens*, *O. mocoana*, *Scaphyglottis exilis*, *Diothonea Arevaloi*, *D. rhodochila*, *Epidendrum atrobrunneum*, *E. brachystele*, *E. brachyschistum*, *E. caquetanum*, *E. laxum* Poepp. & Endl. var. *mocoanum*, *E. nocturnum* Jacq. var. *minor*, *E. nubigenum*, *E. oreogenum*, *E. oxyglossum*, *E. rhopalobulbon*, *E. schistochilum*, *E. sculptum* Rehb. f. var. *Arevaloi*, *E. subfloribundum*, *E. suborbiculare*, *E. vulcanicum*, *E. Wernerii*, *Polystachya caquetana*, *Govenia stictoglossa*, *Cynoches brachydactylon*, *Houlletia Clarae*, *Stanhopea Hoppii*, *Xylobium stanhopeifolium*, *Lindleyella floribunda*, *Huntleya brevis*, *Pityphyllum Amesianum*, *Maxillaria aurantiaca*, *M. bolleoides*, *M. caulina*, *M. caquetana*, *M. elata*, *M. elegans*, *M. Hoppii*, *M. modesta*, *M. saxicola*, *M. tristis*, *M. verecunda*, *M. vestita*, *Camaridium caquetanum*, *C. sterrocaulon*, *Ornithidium cyperifolium*, *O. rhodoleucum*, *O. virescens*, *Cryptocentrum Hoppii*, *C. pergracile*, *Rodriguezia Arevaloi*, *R. macrantha*, *Odontoglossum floribundum*, *O. Hoppii*, *O. Weberbauerianum* (*Oncidium Weberbauerianum* Kränzl.), *Cyrtochilum rostratum*, *C. simulans*, *Oncidium bryocladium*, *O. Hoppii*, *O. Oberonia*, *O. platychilum*, *O. pusillum* (L.) Rehb. f. var. *megalanthum*, *O. saxicolum*, *O. Wernerii*, *Sigmatostalix caquetana*, *Sphyrastylis Hoppii*, *Telipogon cycloglossus*, *T. Hoppii*, *T. lagunae*, *Dichaea caquetana*, *Habenaria Schultzzei*, *Epistephium lamprophyllum*, *Herisea colombiana*, *Epidendrum Anitae*, *E. Arnoldi*, *E. euchroma*, *Dimerandra major*, *Encyclia spatella* (*Epidendrum spatella* Rehb. f.), *Schomburgkia elata*, *S. Schultzzei*, *Mormodes Schultzzei*, *Polycycnis acutiloba*, *Xylobium modestum*, *Lindleyella saxicola*, *Maxillaria Schultzzei*, *M. sulfurea*, *Camaridium quercicolum*, *Odontoglossum Schultzzei*, *Elleanthus bogotensis*, *Stelis bogotensis*, *S. cundinamarcae*, *S. cycloglossa*, *S. decipiens*, *S. mesohybos*, *S. oxysepala*, *S. Schmidtchenii*, *S. tolimensis*, *S. verecunda*, *Lepanthes caucana*, *L. Lehmanni*, *L. Schnitteri*, *Pleurothallis belocardia*, *P. bogotensis*, *P. falcipetala*, *P. Hopfiana*, *P. nutans*, *P. nutans*, *Platystele Schmidtchenii*, *Epidendrum bogotense*, *E. Bungeirothii*, *E. Hopfianum*, *E. strictum*, *Eriopsis colombiana*, *Lindleyella picta*, *Maxillaria camaridioides*, *M. Langlassei*, *M. ochroglossa*, *M. parvula*, *M. Schnitteri*, *Cyrtidium* n. gen., *C. rhomboglossum* (*Chrysocycnis rhomboglossa* Lehm. & Kränzl.), *C. tripterum* (*C. triptera* Schltr.), *Odontoglossum bogotense*, *Ornithocephalus micranthus*, *Dichaea trachysepala*, *Pachyphyllum bryophyllum*, *P. vaginatum*. In addition, several undescribed and unnamed new species are noted.—R. E. Woodson, Jr.

9779. SCHLECHTER, R. Beiträge zur Orchideenkunde von Zentralamerika. I. Orchi-

daceae Powellianae Panamenses. [Contributions to the knowledge of orchids of Central America. I. Powell's orchids of Panama.] Repert. Spec. Nov. Regni Veg. Beihefte 17: 1-95. 1922.—This study is based on a collection of orchids made in Panama by C. W. POWELL. Nearly 200 species are recorded, representing about 60 genera. The following new species, varieties and combinations are included: *Phragmopedilum Warszewiczianum* (*Cypripedium Warszewiczianum* Rehb. f.), *Sobralia panamensis* and var. *albiflos*, *S. Powellii*, *S. Rolfeana*, *Sarcoglottis Hunteriana*, *S. Powellii*, *Stelis collina*, *S. isthmi*, *S. Powellii*, *S. praemorsa*, *Lepanthes chiriquensis*, *Pleurothallis barboselloides*, *P. chiriquensis*, *P. diuturna*, *P. dubia* A. Rich. & Gal. var. *myriantha* (*P. myriantha* Lehm. & Kränzl.), *P. Hunteriana*, *P. Octomeriae*, *P. Powellii*, *P. rhodoglossa*, *P. trachychlamys*, *P. verrucunda*, *Restrepia Powellii*, *Ischilus chiriquensis*, *Hexadesmia pachybulbon*, *H. Powellii*, *Scaphyglottis dolichophylla*, *S. Powellii*, *Epidendrum brevicaule*, *E. chlorocorymbos*, *E. coriifolium* Lindl. var. *purpurascens*, *E. fragrans* Sw. var. *pachypus*, *E. fuscopurpureum*, *E. Hunterianum*, *E. isthmi*, *E. lorifolium*, *E. nocturnum* Jacq. var. *panamense*, *E. platycardium*, *E. porphyrophyllum*, *E. Powellii*, *E. probiflorum*, *E. radicans* Ruiz & Pav. var. *chiriquense*, *E. subpatens*, *E. teretifolium* Sw. var. *Powellianum*, *E. verecundum*, *Nidema Boothii* (*Maxillaria Boothii* Lindl.) and var. *triandrum*, ***Dimerandra* n. gen.**, *D. stenopetala* (*Epidendrum stenopetalum* Hook.), *D. Rimbachii* (*E. Rimbachii* Schltr.), *D. isthmi*, *Encyclia atropurpurea* (W.) Schltr. vars. *leucantha* and *rhodoglossa*, *E. campylostalix* (*Epidendrum campylostalix* Rehb. f.), *E. Hunteriana*, *E. Powellii*, *Polystachya panamensis*, *P. purpurea* (Lam.) DC. var. *Pittierii*, *Govenia Powellii*, *Mormodes Powellii*, *Cynoches guttulatum*, *C. pachydactylon*, *C. Powellii*, *C. stenodactylon*, *Gongora Powellii*, *Coryanthes Hunteriana*, *C. Powellii*, *Lycaste Powellii*, *Xylobium Powellii*, *Maxillaria chiriquensis*, *M. gatunensis*, *M. oreocharis*, *M. panamensis*, *M. Powellii*, *M. pubilabia*, *Camaridium affine*, *C. arachnites*, *C. latifolium*, *Ionopsis utricularioides* (Sw.) Lindl. var. *parviflora*, *Rodriguezia secunda* HBK. var. *panamensis*, *Notylia gracilispica*, *Trichopilia Powellii*, *Odontoglossum Powellii*, *Osmoglossum acuminatum*, *Leochilus Powellii*, *Oncidium fulgens*, *O. isthmi*, *O. Oerstedii* Rehb. f. var. *crispiflorum*, *O. panamense*, *O. Powellii*, *Ornithocephalus diceris*, *O. Powellii*, *Dichaea Powellii*, and *Campylocentrum peniculus*.—J. M. Greenman.

9780. SCHLECHTER, R. Beiträge zur Orchideenkunde vor Zentralamerika. II. Additamenta ad Orchideologiam Costaricensem. [Contributions to the knowledge of the orchids of Central America. II.] Repert. Spec. Nov. Regni Veg. Beihefte 19: 1-307. 1923.—In continuation of his studies of the orchids of Central America the author describes the following new genera, species and varieties, and makes the new combinations indicated: (1) Orchidaceae Amparoanae—*Habenaria Amparoana*, *H. verecunda*, *H. Wercklei*, *Sobralia Amparoae*, *Fregea Wercklei*, *Elleanthus muscicolus*, *E. Wercklei*, *Craniches costaricensis*, *Ponthieva formosa*, *Masdevallia rhopalura*, *M. tenuicauda*, *Stelis Amparoana*, *S. bryophila*, *S. cuspidilabia*, *S. platycardia*, *S. subinconspicua*, *S. Wercklei*, *Lepanthes abnormis*, *L. costaricensis*, *Pleurothallis Amparoana*, *P. calyprostele*, *P. homalantha*, *P. melicoides*, *P. myrtilus*, *P. vittariifolia*, *Barbosella Reichenbachiana* (*Restrepis Reichenbachiana* Endres), *Ischilus Amparoanus*, *Scaphyglottis Wercklei*, *S. gracilis* (*Tetragamestus gracilis* Schltr.), ***Pachystele* n. gen.**, *P. densa*, *P. Jimenezii* (*Scaphyglottis Jimenezii* Schltr.), ***Costaricaea* n. gen.**, *C. Amparoana*, *Fractiunguis cuniculatus*, *Arpophyllum stenostachyum*, *Epidendrum Amparoanum*, *E. Caroli*, *E. falcatum* Lindl. var. *Zeledoniae*, *E. lancilabium*, *E. leprosum*, *E. lockhartioides*, *E. microcardium*, *E. oxyglossum*, *E. platychilum*, *E. poaeforme*, *E. serruliferum*, *Barkeria naevosa* (*Epidendrum naevosum* Lindl.), *Homalopetalum costaricense*, *Cynoches Amparoanum*, *Gongora Amparoana*, *Xylobium sublobatum*, *Kefersteiniia parilabris*, *K. Wercklei*, *Maxillaria Amparoana*, *M. brachybulbon*, *M. Brenesii*, *Camaridium Amparoanum*, *C. bracteatum* (*Ornithidium bracteatum* Schltr.), *C. Bradeorum*, *C. Wercklei*, *Ornithidium stenophyllum*, *O. Wercklei*, *Trigonidium Amparoanum*, *Ionopsis costaricensis*, ***Amparoa* n. gen.**, *A. costaricensis*, *A. beloglossa* (*Odontoglossum beloglossa* Rehb. f.), *Miltonia stenoglossa*, *Oncidium Titania*, *O. Wercklei*, *Lockhartia dipleura*, *Dipterostele minutiflora* (*Telipogon minutiflorus* Kränzl.), *Dichaea acrolephara*, *D. Amparoana*, *D. costaricensis*, *D. poicillantha*, *D. Wercklei*; (2) Orchidaceae Bradeae—*Habenaria irazuensis*, *Elleanthus Bradeorum*, *E. Curtii*, *Sobralia Bradeorum*, *Craniches Alfredii*, *C. Curtii*, *C. irazuensis*, *Ponthieva costaricensis*, *Schiedeella petiolata*, *Eurystyles auriculata*, *Cladobium costaricense*, *Goodyera Bradeorum*, *G. modesta*,

Liparis eustachys, *L. tipuloides* (*Microstylis tipuloides* Lindl.), *L. fratum*, *Stelis Alfredii*, *S. barbae*, *S. micragrostis*, *S. mirabilis*, *S. seleniglossa*, *Lepanthes barbae*, *L. ciliisepala*, *L. microglottis*, *Acostaea* n. gen., *A. costaricensis*, *Platystele lancilabris*, *Pleurothallis Alexandrae*, *P. barbae*, *P. carpintera*, *P. dolichopus* Schltr. var. *Bradeorum*, *P. megachlamys*, *Barbosella Bradeorum*, *Octomeria costaricensis*, *Scaphyglottis bilobulata*, *S. Bradeorum*, *Pachystele dubia* (*Isochilus dubius* Rich. & Gal.), *P. confusa* (*Hexadsmia confusa* Schltr.), *Epidendrum Alfredii*, *E. baculibulbum*, *E. cochleatum* L. var. *costaricense*, *E. notabile*, *E. pseudo-Wallistii*, *E. quinquelobum*, *E. rigidiflorum*, *Encyclia Tonduziana*, *Diacrium bivalvatulum*, *Ghiesbreghtia mexicana* (*Calanthe mexicana* Rehb. f.), *Cynoches pauciflorum*, *Lycaste Bradeorum*, *Pescatorea costaricensis*, *Camaridium Bradeorum*, *Rodriguezia compacta*, *Scelochilus aureus*, *Notylia turialbae*, *Osmoglossum anceps*, *O. convallarioides*, *Oncidium varians*, *Leiochilus gracilis*, *Dichaea Bradeorum*, *Campylocentrum multiflorum*, *C. parvulum*; (3) *Orchidaceae Brenesianae*—*Habenaria Brenesii*, *Sobralia macra*, *S. neglecta*, *Elleanthus Alberti*, *E. poiformis*, *Ponthieva Brenesii*, *P. graciliscapa*, *Microstylis Brenesii*, *Stelis Alberti*, *S. bracteata*, *S. Brenesii*, *S. brevis*, *S. leptophylla*, *S. praesecta*, *S. ramonensis*, *S. violascens*, *Lepanthes apiculifera*, *L. Brenesii*, *L. inornata*, *L. ramonensis*, *L. Tonduziana*, *Pleurothallis biflora*, *P. Brenesii*, *P. brevis*, *P. brunescens*, *P. calerae*, *P. ciliilabia*, *P. Convallaria*, *P. dryadum*, *P. ehrhartiiflora*, *P. eumecocaulon*, *P. flavescens*, *P. gonioglossa*, *P. homalanthoides*, *P. nemorum*, *P. pauciflora*, *P. phyllocardioides*, *P. ramonensis*, *P. stelidiformis*, *P. trachystoma*, *P. vaginata*, *P. violaceo-rosea*, *Brenesia* n. gen., *B. costaricensis*, *Barbosella Brenesii*, *Fractiunguis cuniculatus* Schltr. var. *gracilis*, *Hexadsmia brachyphylla* Rehb. f. var. *longior*, *H. rigidipes*, *Epidendrum Alberti*, *E. Brenesii*, *E. modestiflorum*, *E. muscicolum*, *E. ramonianum*, *E. serricardium*, *E. subviolascens*, *Encyclia Brenesii*, *Polystachya costaricensis*, *Mormodes stenoglossum*, *Catasetum Brenesii*, *Kefersteinia alba*, *Maxillaria acutifolia*, *M. Alberti*, *M. Brenesii*, *M. costaricensis*, *M. lactea*, *M. maleolens*, *M. ramonensis*, *M. rubrilabia*, *Camaridium Brenesii*, *C. ctenostachys* (*Maxillaria ctenostachys* Rehb. f.), *C. simile*, *C. vinosum*, *Ornithidium aurantiacum*, *O. neglectum*, *O. pallidiflavum*, *O. ramonense*, *Sepalosaccus* n. gen., *S. humilis*, *Cryptocentrum gracilipes*, *C. latifolium*, *Trichocentrum Brenesii*, *Notylia Brenesii*, *N. ramonensis*, *Systeloglossum* n. gen., *S. costaricense*, *Mesopinidium leochilinum* (*Rodriguezia leochilina* Rehb. f.), *Leiochilus retusus*, *Oncidium Brenesii*, *O. naranjense*, *O. paleatum*, *Teliogon gracilipes*, *Dichaea Brenesii*, *D. ovatipetala*, *D. oxyglossa*, *Campylocentrum acutum*, *C. Brenesii*; (4) *Orchidaceae novae et rariores collectorum variorum in Costa Rica collectae*—*Habenaria gymnadenioides*, *H. Endresiana*, *Sobralia Pfavii*, *Goodyera micrantha*, *G. ovatilabia*, *G. turialbae*, *Masdevallia reflexa*, *Cryptophoranthus pectinatus*, *Stelis Acostaei*, *S. cyclopeta*, *Lepanthes Acostaei*, *L. Jimenezii*, *L. lancifolia*, *L. pubilabia*, *Acostaea pleurothalloides*, *Pleurothallis Acostaei*, *P. Cooperi*, *P. excavata*, *P. minimiflora*, *P. pilosissima*, *Restrepia angustilabia*, *R. subserrata*, *R. Tonduzii*, *Hexadsmia Acostaei*, *H. Jimenezii*, *Ramonian* gen., *R. pulchella*, *Epidendrum trianthum*, *Chysis costaricensis*, *Cynoches Tonduzii*, *Gongora unicolor*, *Kefersteinia microcharis*, *K. subquadrata*, *Maxillaria Acostaei*, *M. brevipes*, *M. piestopus*, *M. schistostele*, *Dichaea Acostaei*, and *D. similis*.—J. M. Greenman.

9781. SCHLECHTER, R. Die Orchidaceen der Insel Celebes. [Orchidaceae of Celebes Island.] Repert. Spec. Nov. Regni Veg. 21: 113–212. 1925.—The author gives an account of his expeditions on the Island of Celebes and compiles a list of the known orchids, including a table showing the geographical distribution of the various genera. The following new species, varieties, and combinations are included: *Habenaria biloba* (*Peristylus bilobus* Rolfe); *Zeuxine stenochila*; *Odontochilus platysepalus*; *Coelogyne platyphylla*; *C. Steffensii*; *Liparis piestopus*; *Arundina speciosa* Bl. var. *Sarasinorum*; *Dilochia celebica* (*Arundina celebica* Schltr.); *Dendrobium oliganthum*; *D. phragmitoides*; *D. lacustre*; *Eria anomala*; *E. gowana*; *Sarcostoma subulatum*; *Glossorhyncha sororia* (*Glomera sororia* J. J. Sm.); *Appendicula anceps* Bl. var. *celebica*; *A. striata*; *Phajus trichoneurus*; *Calanthe triplicata* (Willem.) Ames. var. *Minahassae*; *C. hyacinthina*; *C. melinosema*; *Spathoglottis velutina*; *S. plicata* Bl. var. *Minahassae*, *Bulbophyllum ceratostyloides*; *B. Steffensii*; *B. Sarasinorum*; *Phreatia Minahassae*; *Eulophia exaltata* Rehb. f. var. *Sarasinorum*; *Cymbidium celebicum*; *Adenoncos macranthus*; *Robiquetia longipedunculata*; and *R. angustifolia*.—R. E. Woodson, Jr.

9782. SCHLECHTER, R. Die Orchideenfloren der südamerikanischen Kordillerenstaaten. I. Venezuela. [The orchid-floras of the Cordilleran states of South America. I. Venezuela.]

Repert. Spec. Nov. Regni Veg. Beihefte 6: 1-100. 1919.—A brief introduction precedes a general consideration of the more or less distinctive regions of Venezuela and a historical account of botanical exploration in that country. The 2nd part of the paper consists of descriptions of new species; and the 3rd part is given over to an enumeration of the genera and species of orchids known from Venezuela up to 1919. The following new species and combinations are included: *Habenaria caracasana*, *H. Ernstii*, *H. Gollmeri*, *Pogonia nana*, *Elleanthus galipanensis*, *Gomphichis gracilis*, *Cranichis Fendleri*, *Haplorchis cheirostylodes*, *Physurus Pittierii*, *Microstylis Johniana*, *Liparis Fendleri*, *Scaphosepalum trachypus*, *Stelis amblyophylla*, *S. calceolus*, *Pleurothallis intermedia*, *P. nephrocardia*, *Epidendrum bathyschistum*, *E. Ernstii*, *E. lactum*, *E. pachyanthum*, *E. tricallosum*, *E. venezuelanum*, *Encyclia leucantha*, *E. recurvata*, *Diacrium venezuelanum*, *Bletia stenophylla*, *Cyrtopodium naiguatae*, *Govenia Ernstii*, *Comparetia venezuelana*, *Notylia venezuelana*, *Gomphichis adnata* (*Stenoptera adnata* Ridl.), *G. viscosa* (*S. viscosa* Rchb. f.), *Cryptophoranthus sarcophyllus* (*Pleurothallis sarcophylla* Rchb. f.), *Lepanthes triura* (*Stelis triura* Lindl.), *Pleurothallis lancipetala* (*Dubois-Reymondia lancipetala* Karst.), *P. palpigera* (*D. palpigera* Karst.), *P. punctata* (*Rhynchospora punctata* Karst.), *Scaphyglottis Felskyi* (*Ponera Felskyi* Rchb. f.), *Epidendrum crassipes* (*E. brachycladium* Lindl. var. *crassipes* Rchb. f.), *E. flavescens* (*E. fallax* Lindl. var. *flavescens* Rchb. f.), *Encyclia amicta* (*Epidendrum amictum* Lindl. & Rchb. f.), *E. ceratistes* (*Epidendrum ceratistes* Lindl.), *E. diurna* (*Limodorum diurnum* Jacq.), *E. granitica* (*Epidendrum graniticum* Lindl.), *E. papilionacea* (*Epidendrum papilionaceum* Vahl), *E. tessalata* (*Epidendrum tessalatum* Batem.), *E. Wageri* (*Epidendrum Wageri* Kl.), *Xylobium Wageri* (*Maxillaria Wageri* Rchb. f.), *Galeottia Jorisiana* (*Zygopetalum Jorisianum* Rolfe), *Oncidium sanguinolentum* (*Leochilus sanguinolentus* Lindl.), *Lockhartia longifolia* (*Fernandezia longifolia* Lindl.), and *Campylocentrum Lansbergii* (*Angraecum Lansbergii* Rchb. f.).—J. M. Greenman.

9783. SCHLECHTER, R. Die Orchideenfloren der südamerikanischen Kodillereenstaaten. II. Colombia. [The orchid-floras of the Cordilleran states of South America. II. Colombia.] Repert. Spec. Nov. Regni Veg. Beihefte 7: 1-301. 1920.—This part follows the plan of the 1st part issued under the above general title. The new genera, species, and combinations included are as follows: *Habenaria caucana*, *H. Maderoi*, *H. Smithii*, **Monophyllorchis** n. gen., *M. colombiana*, *Pogonia acuminata*, *P. elegantula*, *P. Maderoi*, *P. venusta*, *Vanilla calyculata*, *S. obralia antioquiensis*, *S. densifoliata*, *S. exilis*, *S. splendida*, *Elleanthus grandiflorus*, *E. Smithii*, *Sertifera colombiana*, *Pseudocentrum sphaerocorys*, *Aa colombiana*, *A. denticulata*, *A. Maderoi*, *A. nigrescens*, *Prescottia filiformis*, *P. gracilis*, *P. longifolia*, *P. Smithii*, *Gomphichis brachystachys*, *G. caucana*, *G. heteroideis*, *G. lancipetala*, *G. scaposa*, *Pterichis acuminata*, *P. tomentosula*, *Cranichis antioquiensis*, *C. atrata*, *C. brachyblephara*, *C. cylindrostachys*, *C. ovatilabia*, *C. pleioneura*, *C. polyantha*, *C. polyblephara*, *C. pycnantha*, *C. stictophylla*, *Ponthi-eva elata*, *P. microglossa*, *Hapalorchis longirostris*, *H. trilobata*, *Brachystele longiflora*, *Cyclopogon Maderoi*, *C. spiranthoides*, *Pelexia caucae*, *P. hamata*, *Trachelosiphon colombianum*, *T. cristatum*, *Physurus caucanus*, *P. dolichostachys*, *P. erythrodoides*, *P. heteroideis*, *P. paleaceus*, *P. procerus*, *P. zeuxinoides*, *Microstylis mucronulata*, *Liparis colombiana*, *Scaphosepalum platypetalum*, *Masdevallia bathyschista*, *M. callifera*, *M. densiflora*, *M. echinocarpa*, *M. exilipes*, *M. oligantha*, *M. petiolaris*, *M. pteroglossa*, *M. tenuipes*, **Porroglossum** n. gen., *P. colombianum*, *Stelis antioquiensis*, *S. apiculata*, *S. bigibba*, *S. caucae*, *S. citrina*, *S. crassilabia*, *S. Eugenia*, *S. fruticulosa*, *S. Langlassei*, *S. macropoda*, *S. Maderoi*, *S. myriantha*, *S. pachyphylla*, *S. pachystele*, *S. proprepens*, *S. simula*, *S. tenuis*, *S. Trianaei*, *Lepanthes antioquiensis*, *L. dolichopus*, *L. marginata*, *L. pastoensis*, *L. peperomioides*, *L. rhombipetala*, *L. stenoscleros*, *L. superposita*, *L. trachysepala*, *L. tricusps*, *Pleurothallis brevicaulis*, *P. caliensis*, *P. chlamydropus*, *P. citrina*, *P. hirtipes*, *P. Langlassei*, *P. lauta*, *P. leontoglossa*, *P. lepanthoides*, *P. lepantha*, *P. microp-tera*, *P. ochroleuca*, *P. papillisepala*, *P. patula*, *P. peniculus*, *P. platysepala*, *P. pteroglossa*, *P. quadricaudata*, *P. scaphioglottis*, *P. schistopetala*, *P. Smithii*, *P. sororia*, *P. sotarae*, *P. steli-doides*, *P. Trianaei*, *Barbosella dolichorhiza*, *B. longipes*, *Restrepia antioquiensis*, *R. caucana*, *R. leontoglossa*, *R. serrilabia*, *Octomeria colombiana*, *Scaphyglottis genychna*, *S. sancta-martae*, *S. stricta*, **Jacquinella** n. gen., *J. colombiana*, *J. globosa* (*Cymbidium globosum* Jacq.), *J. leucomelana* (*Epidendrum leucomelanum* Rchb. f.), *Epidendrum antioquiense*, *E. Bauman-nianum*, *E. calothyrsus*, *E. caucae*, *E. cebolleta*, *E. commelinoides*, *E. cyclopterum*, *E. de-*

curviflorum, *E. diphyllum*, *E. dolichopus*, *E. elleanthoides*, *E. Eugenii*, *E. fraternum*, *E. hastilabium*, *E. ionodesme*, *E. juncifolium*, *E. laxifoliatum*, *E. leucarachne*, *E. longicrure*, *E. macroceras*, *E. Maderoi*, *E. melianthum*, *E. pachyneuron*, *E. pachyphyllum*, *E. pachypodum*, *E. pastoense*, *E. persimile*, *E. polyschistum*, *E. prasinum*, *E. protractum*, *E. quinquecallosum*, *E. rhabdobilbon*, *E. rugulosum*, *E. sanguineum*, *E. sanctae-martae*, *E. scytocladium*, *E. Smithii*, *E. sororium*, *E. sterroanthum*, *E. sterrophylum*, *E. sympodiale*, *E. trifidum*, *E. trimeroglossum*, *E. zipaquiranum*, *Lanium colombianum*, *Encyclia Maderoi*, *Polystachya colombiana*, *Galeandra leptoceras*, *Govenia platyglossa*, *Catasetum blepharochilum*, *C. caucanum*, *Schlimia pandurata*, *Houlletia unguiculata*, *Koellensteinia elegantula*, *Kefersteinia tolimensis*, *Chondrorhyncha amaribilis*, **Pityphyllum** n. gen., *P. antioquiense*, *P. laricinum* (*Maxillaria laricina* Kränzl.), *Maxillaria adscendens*, *M. aequiloba*, *M. angustifolia*, *M. Baumanniana*, *M. brachypoda*, *M. caucanum*, *M. farinifera*, *M. Maderoi*, *M. microblephara*, *M. patens*, *M. pleiantha*, *M. plicata*, *M. subpandurata*, *M. subulifolia*, *M. truncatilabia*, *M. unguiculata*, *M. unguilabia*, *M. witsenioides*, *Cammaridium caucanum*, *C. equitans*, *C. lamprochlamys*, *Ornithidium compactum*, *O. dichotomum*, *O. pastoense*, *O. toriferum*, *O. vagans*, *Chrysocycnis triptera*, **Cyrtoglottis** n. gen., *C. gracilipes*, **Anthosiphon** n. gen., *A. roseans*, *Trichocentrum brachyceras*, *T. verruciferum*, *Comparetia erecta*, *C. pulchella*, *Bractia verruculifera*, *Notylia Oberonia*, *N. obtusa*, *Odontoglossum Maderoi*, **Caucaea** n. gen., *C. obscura* (*Rodriguezia obscura* Lehm. & Kränzl.), *Oncidium caucanum*, *O. Maderoi*, *O. trachycaulon*, *Stigmatostalix pandurata*, *Roezliella cuculligera*, *R. Ibis*, **Sphyrastylis** n. gen., *S. oberonioides*, *Ornithocephalus Lehmannii*, *Telipogon caucanus*, *T. gracilis*, *T. Lehmannii*, *T. pastoanus*, *T. venustus*, *Lockhartia hologlossa*, *L. unicornis*, *Dichaea acuminata*, *D. camaridioides*, *D. Lehmannii*, *D. Selaginella*, *D. tenuifolia*, *Pachyphyllum micrangis*, *P. micranthum*, *P. Stuebelii*, *Campylocentrum colombianum*, *Aa leucantha* (*Altensteinia leucantha* Rehb. f.), *Craniches pastoensis* (*Goodyera Lehmanniana* Kränzl.), *Scaphosepalum echidna* (*Masdevallia echidna* Rehb. f.), *S. erinaceum* (*M. erinacea* Rehb. f.), *S. lima* (*M. lima* Lehm. & Kränzl.), *S. zipheres* (*M. zipheres* Rehb. f.), *Masdevallia trichroma* (*M. tricolor* Rehb. f. in Gardn. Chron. 1882, not 1849), *Pleurothallis Lehmanniana* (*P. endotrachys* Lehm. & Kränzl., not Rehb. f.), *P. medellinensis* (*Masdevallia tricarinata* Lehm. & Kränzl.), *Brachionidium tetrapetalum* (*Pleurothallis tetrapetala* Lehm. & Kränzl.), *Scaphyglottis esuriens* (*Ponera esuriens* Rehb. f.), *Epidendrum peraltum* (*E. altissimum* Lehm. & Kränzl., not Batem.), *Encyclia aspera* (*Epidendrum asperum* Lindl.), *E. insidiosa* (*Epidendrum insidiosum* Rehb. f.), *E. Ortgiesii* (*Epidendrum Ortgiesii* Regel), *E. replicata* (*Epidendrum replicatum* Lindl.), *Catasetum pallidiflorum* (*C. pallidum* Cogn., not Kl.), *Kefersteinia flaveola* (*Zygopetalum flaveolum* Rehb. f.), *K. Klabochii* (*Z. Klabochii* Rehb. f.), *Warszewiczella ionoleuca* (*Z. ionoleucum* Rehb. f.), *Bollea Whitei* (*Z. Whitei* Rolfe), *Huntleya apiculata* (*Batemannia apiculata* Rehb. f.), *H. Gustavi* (*B. Gustavi* Rehb. f.), *Maxillaria tocatana* (*M. stenophylla* Lehm. & Kränzl., not Rehb. f.), *Leucohyle dasyandra* (*Trichopila dasyandra* Rehb. f.), and *Odontoglossum medellinense* (*Cyrtorchilum medellinense* Kränzl.).—J. M. Greenman.

9784. SCHLECHTER, R. Die Orchideenfloren der südamerikanischen Kordillerenstaaten. III. Ecuador. [The orchid-floras of the Cordilleran states of South America. III. Ecuador.] Repert. Spec. Nov. Regni Veg. Beihefte 8: 1-172. 1921.—The author presents briefly the natural features of Ecuador, gives a short account of botanical exploration, describes several new species, and enumerates all orchids known from that country up to 1921. The following new genera, species and combinations are included: *Elleanthus fractiflexus*, *E. petrogeiton*, *E. roseus*, *E. stenophyllus*, *Aa macra*, *A. rhynchocarpa*, *A. riobambae*, *A. ustulata*, *Prescottia longipetiolata*, *Gomphichis cranichoides*, *G. Sodiroi*, *Pterichis pauciflora*, *P. seleniglossa*, *Craniches elliptica*, *C. sororia*, *Cyclopogon argyrotaeniis*, *C. cranichoides*, *C. gracilis*, *C. macer*, *Pelexia ecudorensis*, *Microstylis lloensis*, *M. Sodiroi*, *Masdevallia corazonica*, *M. parvula*, *Cryptophoranthus beloglottis*, *Physosiphon inaequisepalus*, *Stelis altigena*, *S. cordibractea*, *S. coturcoensis*, *S. cuencana*, *S. lloensis*, *Lepanthes macropoda*, *L. macroura*, *L. pensilis*, *L. rhodophylla*, *Pleurothallis Aloisii*, *P. conchopetala*, *P. Henrici*, *P. lasioglossa*, *P. lloensis*, *P. lojiae*, *P. microcharis*, *P. nephroglossa*, *P. opeatorhyncha*, *P. rhizomatosa*, *P. sigsigensis*, *P. subreniformis*, *P. Wolfiana*, *Diothonea angustifolia*, *D. viridiflora*, *Epidendrum Aloisii*, *E. atacazoicum*, *E. bifalce*, *E. caloglossum*, *E. calyptrorchilum*, *E. chortophyllum*, *E. cuencanum*, *E. cuniculatum*, *E. dasytainia*, *E. fruticetorum*, *E. geminatum*, *E. guayasense*, *E. imitans*, *E. indecoratum*, *E. megahybos*, *E.*

miniaturum, *E. mojanidae*, *E. neglectum*, *E. ochranthum*, *E. Ornithidii*, *E. orthocaulum*, *E. peperomioides*, *E. pichinchae*, *E. platyphylum*, *E. podocarpophilum*, *E. pteroglottis*, *E. ramistratum*, *E. Reichenbachianum*, *E. renilabium*, *E. rhacoglossum*, *E. riobambae*, *E. sarcoglottis*, *E. sphaeranthum*, *E. splendidum*, *E. tunguraguae*, *E. zingiberaceum*, *Lanum ecuadorensis*, *Encyclia angustiloba*, *Polystachya ecuadorensis*, *Govenia Sodiroi*, *Catasetum Sodiroi*, *Xylobium gracile*, *Kefersteinia lojae*, *Maxillaria ecuadorensis*, *M. microdendron*, *M. microtricha*, *M. nutantiflora*, *M. poecilotheca*, *M. stictantha*, *M. stricta*, *M. xantholeuca*, *Camaridium dichotomum*, *C. longum*, *Ornithidium breve*, *O. squarrosus*, *O. Sodiroi*, *Oncidium Aloisii*, *O. Millei*, *Cryptarrhena unguiculata*, *Telipogon ecuadorensis*, *T. pachyhybos*, *Trichoceros carinifer*, *Dipterostele* n. gen., *D. microglossa*, *Sodirolella* n. gen., *S. ecuadorensis*, *Dichaea ecuadorensis*, *D. Sodiroi*, *Nasonia robusta*, *Phragmopedilum reticulatum* (*Selenipedium reticulatum* Rehb. f.), *Craniches fertilis* (*Goodyera fertilis* Lehm. & Kränzl.), *Scaphosepalum amethystinum* (*Masdevallia amethystina* Rehb. f.), *Pleurothallis ignivomi* (*P. Pichinchae* Schltr., not Rehb. f.), *P. longerepens* (*P. Millei* Schltr.), *P. Reichenbachiana* (*P. rhomboglossa* Rehb. f. 1888, not 1865), *Epidendrum Neolehmannia* (*Neolehmannia epidendroides* Kränzl.), and *E. pergracile* (*E. gracilimum* Lehm. & Kränzl., not Rehb. f.).—*J. M. Greenman*.

9785. SCHLECHTER, R. Die Orchideenfloren der südamerikanischen Kordillerenstaaten. IV. Peru. [The orchid-floras of the Cordilleran states of South America. IV. Peru.] Repert. Spec. Nov. Regni Veg. Beihefte 9: 1-182. 1921.—After a brief introduction, a statement of the natural characteristics, and a review of botanical exploration of Peru, the following new species are described and new combinations and names made: *Phragmopedilum cajamarcae*, *Epistephium amabile*, *E. macrophyllum*, *Sobralia alstroemeroides*, *Elleanthus bambusaceus*, *E. cajamarcae*, *E. Caroli*, *E. conchocylus*, *E. gastroglottis*, *E. igneus*, *E. laxifolius*, *E. pallidiflavus*, *E. porphyrocephalus*, *Gomphichis plantaginea*, *G. Koehleri*, *Aa brevis*, *A. Lechleri*, *A. pumilio*, *A. Weberbaueri*, *Stenoptera elata*, *Pterichis leucoptera*, *P. macroptera*, *Craniches Koehleri*, *Ponthieva microglossa*, *P. oligoneura*, *P. venusta*, *P. Weberbaueri*, *Brachystele Lechleri*, *Cyclopogon densiflorus*, *C. moyobambae*, *Physurus stenocentron*, *Masdevallia purpurina*, *M. venusta*, *M. Weberbaueri*, *Stelis bicallosa*, *S. Filomenoi*, *S. inversa*, *S. macra*, *S. megistantha*, *S. melicoides*, *S. nephropetala*, *S. piestopus*, *S. phaeantha*, *S. recurvula*, *S. rhizomatosa*, *S. rhomboglossa*, *S. Weberbaueri*, *Lepanthes juninensis*, *Pleurothallis angustilabia*, *P. brachylephara*, *P. cajamarcae*, *P. chanchamayoensis*, *P. genychila*, *P. graminea*, *P. huanucoensis*, *P. juninensis*, *P. phyllostachys*, *P. tricaudata*, *P. trimeroglossa*, *Scaphyglottis Antonii*, *S. loretoensis*, *Isochilus peruvianus*, *I. brasiliensis*, *Epidendrum bambusaceum*, *E. brevicaulum*, *E. cajamarcae*, *E. cuzcoense*, *E. Filomenoi*, *E. fruticulus*, *E. fuscum*, *E. gnomus*, *E. haematanthum*, *E. huanucoense*, *E. juninense*, *E. macrodonax*, *E. melinocaron*, *E. nephroglossum*, *E. oliganthum*, *E. panicoides*, *E. patulipetalum*, *E. platyoon*, *E. pleurobotrys*, *E. splendens*, *E. stenophylon*, *E. tarmense*, *E. unifoliatum*, *E. validum*, *E. vinosum*, *Lanum peruvianum*, *Schomburgkia moyobambae*, *Warrea speciosa*, *Gongora nigropunctata*, *Coryanthes bicalcarata*, *Lycaste Filomenoi*, *Xylobium Filomenoi*, *Maxillaria Abelei*, *M. brachypetala*, *M. calantha*, *M. Koehleri*, *M. macropoda*, *M. platylaba*, *M. Weberbaueri*, *Ornithidium dolichophyllum*, *Trigonidium loretoense*, *T. peruvianum*, *Notylia moyobambae*, *Odontoglossum bellum*, *O. juninense*, *O. Koehleri*, *O. Loesenerianum*, *O. trilobum*, *Brassia Filomenoi*, *B. Koehlerorum*, *Oncidium cajamarcae*, *Solenidium peruvianum*, *Orthocephalus longilabris*, *Telipogon gnomus*, *Pachyphyllum brevicornatum*, *P. lycopodioides*, *P. tenue*, *Fernandezia pulchra*, *Campylocentrum loretoense*, *Pogonia monantha* (*Epistephium monanthum* Poepp. & Endl.), *Gomphichis longiscapa* (*Craniches longispica* Kränzl.), *Altensteinia pterostyloides* (*Prescottia pterostyloides* Kränzl.), *Aa inaequalis* (*Altensteinia inaequalis* Rehb. f.), *Pterichis barbifrons* (*Prescottia barbifrons* Kränzl.), *Craniches calva* (*Ponthieva calva* Kränzl.), *Cyclopogon stictophyllum* (*Spiranthes variegata* Kränzl., not L.), *Sarcoglottis olivacea* (*Spiranthes olivacea* Rolfe), *Pelexia matucanensis* (*S. matucanensis* Kränzl.), *P. Weberbaueri* (*S. Weberbaueri* Kränzl.), *Physurus major* (*Microchilus major* Presl), *Stelis parviflora* (*Humboldtia parviflora* Ruiz & Pav.), *Pleurothallis dichotoma* (*Specklinia dichotoma* Poepp. & Endl.), *P. Myozanthus* (*Myozanthus monophyllus* Poepp. & Engl.), *P. phalangifera* (*Acronia phalangifera* Presl), *P. purpurea* (*Humboldtia purpurea* Ruiz & Pav.), *P. rufescens* (*Kraenzlinella rufescens* Rolfe), *Barbosella longiflora* (*Masdevallia longiflora* Kränzl.), *Epidendrum Micro-Cattleya* (*Neolehmannia Micro-Cattleya* Kränzl.), *Encyclia thrombodes* (*Epidendrum thrombodes*

Rehb. f.), *Polystachya Poeppigii* (*Encyclia polystachya* Poepp. & Endl.), *Xylobium carnosum* (*Dendrobium carnosum* Presl), *Maxillaria Lindleyana* (*M. crocea* Lindl.), *M. sanguineomaculata* (*Dichaea arbuscula* Kränzl.), *Camaridium grandiflorum* (*Isochilus grandiflorus* Lindl.), *C. Matthewsii* (*Maxillaria Matthewsii* Rehb. f.), *C. cassapense* (*M. cassapensis* Rehb. f.), *Rodriguezia bicolor* (*Sutrina bicolor* Lindl.), *Oncidium Cogniauxianum* (*O. gracillimum* Cogn., not Rolfe), *Petalocentrum bicornutum* (*Sigmatostalix bicornuta* Rolfe), *Pachyphyllum denticulatum* (*Fernandezia denticulata* Ruiz & Pav.), *P. haematodes* (*F. haematodes* Ruiz & Pav.), *P. muscoides* (*Orchidotypus muscoides* Kränzl.), and *P. subbiflorum* (*Fernandezia subbiflora* Ruiz & Pav.)—J. M. Greenman.

9786. SCHLECHTER, R. Die Orchideenfloren der südamerikanischen Kordillerenstaaten. V. Bolivia. [The orchid-floras of the Cordilleran states of South America. V. Bolivia.] Repert. Spec. Nov. Regni Veg. Beihefte 10: 1-80. 1922.—This is the 5th and last part of the series under the above general title and conforms to the plan of the parts previously issued. The following new species, combinations, and names are included: *Habenaria Bangii*, *H. bermejoensis*, *H. Buchtienii*, *H. leptantha*, *H. Miguelii*, *H. petrogeiton*, *H. Theodori*, *H. yungasensis*, *Elleanthus selosus*, *Aa chiogena*, *A. microtidis*, *A. sphaeroglossa*, *A. trilobulata*, *Pterichis yungasensis*, *Cranichis Mandonii*, *Beloglottis boliviensis*, *Pelexia Fiebrigii*, *Microstylis Ottonis*, *M. Reichenbachiana*, *Liparis otophyllon*, *Masdevallia Bangii*, *M. Herzogii*, *Pleurothallis dolichocaulon*, *P. rhopalocarpa*, *Scaphyglottis boliviana*, *Epidendrum humidicolum*, *E. quinquepartitum*, *E. Theodori*, *Encyclia Pflanzii*, *E. Steinbachii*, *Galeandra Fiebrigii*, *Bletia Mandonii*, *Bulbophyllum bolivianum*, *Cyrtopodium Pflanzii*, *Zygopetalum bolivianum*, *Maxillaria boliviensis*, *Comparetia splendens*, *Trizeuxis andina*, *Notylia boliviensis*, *Dichaea Buchtienii*, *D. longa*, *Gomphiches longifolia* (*Stenoptera longifolia* Rolfe), *G. plataginea* (*S. plataginea* Schltr.), *Pleurothallis Buchtienii* (*P. boliviana* Schltr., not Rehb. f.), *P. triptera* (*P. trialata* Rolfe, not Cogn.), *Oncidium subulifolium* (*O. bolivianense* Oppenheim), and *Pachyphyllum cyrtophyllum* (*P. falcifolium* Schltr., not Rehb. f.).—J. M. Greenman.

9787. SCHLECHTER, R. Einige neue Burmannia-Arten aus Zentralafrika. [Some new species of Burmannia from Central Africa.] Repert. Spec. Nov. Regni Veg. 21: 81-85. 1925.—The following new species are described: *Burmannia chariensis*; *B. Le Testui*; *B. obscurata*; *B. Tisserantii*; and *B. Welwitschii*.—R. E. Woodson, Jr.

9788. SCHLECHTER, R. Figuren-Atlas zu den Orchidaceen von Deutsch Neu-Guinea. Repert. Spec. Nov. Regni Veg. Beihefte 21: 72 pl. 1923.

9789. SCHLECHTER, R. Orchidaceae. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 223-227. 1922.—*Brachycorythis ugandensis*, *Disa occultans*, *Habenaria lindblomii*, *H. montis-Elgon*, and *Polystachya lindblomii* are described, all collected by G. Lindblom in 1920.—F. W. Pennell.

9790. SCHLECHTER, R. Orchidaceae novae Beccarianae. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 14-20. 1921.—Nine new species are proposed, based upon collections made by O. Beccari in Malaysia. These are: from Borneo, collected 1865-1867, *Coelogyne odoardi*, *C. rhabdombulbon*, *C. sarawakensis*, *Dendrochilum bulbophylloides*, *Podochilus auriculigerus* and *Sarcostoma borneense*; from Sumatra, collected in 1878, *Appendicula padangensis*, *Pholidota beccarii* and *Sarcanthus beccarii*.—F. W. Pennell.

9791. SCHLECHTER, R. Orchidaceae novae et criticae. Repert. Spec. Nov. Regni Veg. 18: 321-326. 1922.—The following species from Madagascar are described as new to science: *Cynosorchis moramangana*, *Bulbophyllum Alleizettei*, *B. Humbertii*, *B. leptostachyum*, *B. maromanganum*, *B. Viguieri*, *Jumellea gracilipes*, *Angraecum Alleizettei*, *A. appendiculoides*, and *A. Viguieri*.—J. M. Greenman.

9792. SCHLECHTER, R. Orchidaceae novae et criticae. Repert. Spec. Nov. Regni Veg. 20: 378-384. 1924.—This series is extended by descriptions of the following new species from China: *Amitostigma Farreri*; *A. Forrestii*; *A. tibeticum*; *Platanthera altigena*; *Habenaria Balfouriana*; *H. pulla*; *Epipactis Wilsoni*; *Panisea Cavaleriei*; *Liparis Simeonis*; and *Cryptochilus Farreri*. The following new combinations are included: *Platanthera glossophora* (*Habenaria glossophora* W. W. Sm.), *P. multibracteata* (*H. multibracteata* W. W. Sm.), *P. oreophila* (*H. oreophila* W. W. Sm.), *P. pugionifera* (*H. pugionifera* W. W. Sm.), and *P. subulifera* (*H. subulifera* W. W. Sm.).—R. E. Woodson, Jr.

9793. SCHLECHTER, R. *Orchidaceae novae et criticae*. Repert. Spec. Nov. Regni Veg. 21: 330-343. 1925.—The following new species are described in detail: *Habenaria Laatiana*, Guatemala; *H. trimeropetala*, Brazil; *Fuertesella grandiflora* (*Cranichis grandiflora* Ames & Schweinf.), Cuba; *Cyclopogon miradorensis*, Mexico; *Sarcoglottis Herzogii*, Bolivia; *S. Purpusiorum*, Mexico; *Physurus parviflorus*, Mexico; *Microstylis guatemalensis*, Guatemala; *M. Reichei*, Mexico; *Pleurothallis gacayana*, Guatemala; *Octadesmia oligophylla*, Cuba; *Epidendrum Miguelii*, Bolivia; *Encuelia Purpusii*, Mexico; *Basiphyllaea angustifolia*, Cuba; *Coral-lorhiza fimbriata*, Mexico; *Odontoglossum Purpusii*, Mexico; *Leiochilus ampliflorus*, Mexico; *Oncidium minutiflorum*, Paraguay; *O. Ostenianum*, Paraguay; and *Campylocentrum Zehntneri*, Brazil.—R. E. Woodson, Jr.

9794. SCHLECHTER, R. *Orchidaceae novae, in caldariis Horti Dahlemensis cultae*. III. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 117-126. 1922.—The following new species are described: *Bulbophyllum jungwirthianum* from Kamerun, *B. perii* from Brazil, *Chysis tricostata* probably from Central America, *Coelogyne picta* probably from Burma, *Cryptophoranthus dusenii* from Brazil, *Dendrobium calothyrsos* and *D. theionochilum* probably from Burma, *D. chrysobulbon* from the Sunda Islands, *Echioglossum birmanicum* from Burma, *Elleanthus pusillus* from Brazil, *Oncidium hedyosmum* possibly from Colombia, and *Pleurothallis biglandulosa* from Brazil.—F. W. Pennell.

9795. SCHLECHTER, R. *Orchidaceae Perrierianae*. Ein Beitrag zur Orchideenkunde der Insel Madagaskar. [Orchids of Perrier. A contribution to the knowledge of orchids of the island of Madagascar.] Repert. Spec. Nov. Regni Veg. Beihefte 33: 1-391. 1925.—This contribution records 446 species, representing 58 genera, of orchids of Madagascar. The following genera, species, and varieties are new to science: *Rolfeella* n. gen., *R. glaberrima* (*Holothrix glaberrima* Ridl.), *Tylostigma foliosum*, *T. herminiioides*, *T. Hildebrandtii* (*Habenaria Hildebrandtii* Ridl.), *T. tenellum*, *Benthamia Bathieana*, *B. exilis* and var. *tenuissima*, *B. herminiioides*, *B. macra*, *B. melanopoda*, *B. minutiflora* (*Habenaria minutiflora* Ridl.), *B. monophylla*, *B. nivea*, *B. perularioides*, *B. rostrata*, *B. verecunda*, *Helorchis* n. gen., *H. filiformis* (*Peristylus fififormis* Kränzl.), *Cynosorchis alborubra*, *C. amabilis*, *C. andringitrana*, *C. Bathiei*, *C. bella*, *C. brachyceras*, *C. cuneilabia*, *C. decolorata*, *C. filiformis*, *C. gigas*, *C. gracilis* (*Bicornella gracilis* Lindl.), *C. graminea* (*Satyrium gramineum* Thou.), *C. Henrici*, *C. hologlossa*, *C. inversa*, *C. Jumelleana* and var. *gracillima*, *C. laeta*, *C. lancilabia*, *C. longifolia* (*Bicornella longifolia* Lindl.), *C. melinantha*, *C. ochroglossa*, *C. oligadenia*, *C. ozyptetala*, *C. praecox*, *C. pulchra* Schltr. var. *laxiflora*, *C. rhomboglossa*, *C. sambiranoensis*, *C. saxicola*, *C. similis* (*Bicornella similis* Schltr.), *C. stolonifera* (*B. stolonifera* Schltr.), *C. tenuicalcar*, *C. zaratananae*, *Microtheca* n. gen., *M. madagascariica*, *Physoceras* n. gen., *P. bellum*, *P. epiphyticum*, *P. mesophyllum* (*Cynosorchis mesophylla* Schltr.), *P. Perrieri*, *P. violaceum*, *Lemuranthe* n. gen., *L. gymnochiloides* (*Habenaria gymnochiloides* Schltr.), *Habenaria ankaratrana*, *H. Bathiei*, *H. demissa*, *H. quartizicola*, *H. regulis*, *Disa andringitrana*, *D. Perrieri*, *Brownleea Perrieri*, *Satyrium Perrieri*, *Disperis majungensis*, *D. saxicola*, *D. similis*, *D. trilineata*, *Vanilla Perrieri*, *Nervilia affinis*, *N. Perrieri*, *N. pilosa* Schl. & Perr., *Auxopus madagascariensis*, *Goodyera flaccida*, *G. humicola* (*Platylepis humicola* Schltr.), *G. Perrieri* (*P. Perrieri* Schltr.), *Cheirostylis micrantha*, *Zeuzine sambiranoensis*, *Oberonia disticha* (*Epidendrum distichum* Lam.), *Liparis andringitrana*, *L. Bathiei*, *L. densa*, *L. dryadum*, *L. gracilipes*, *L. Henrici*, *L. Hildebrandtiana*, *L. imerinensis*, *L. latilabris*, *L. listeroides*, *L. microcharis*, *L. nephrocardia*, *L. rivalis*, *L. sambiranoensis*, *L. stenophylla*, *L. trulliformis*, *L. verecunda*, *L. zaratananae*, *Imerinaea* n. gen., *I. madagascariica*, *Polystachya cornigera*, *P. Henrici*, *P. oreocharis*, *Calanthe repens*, *C. sylvatica* (Thou.) Lindl. var. *pallidipetala*, *Gastrorchis* n. gen., *G. Francoisii*, *G. Humblotii* (*Phajus Humblotii* Rehb. f.), *G. tuberculosa* (*Limodorum tuberculosum* Thou.), *Bulbophyllum calyptropus*, *B. pantoblepharon*, *B. pleurothallopsis*, *B. lyperocephalum*, *B. lyperostachyum*, *B. hyalinum*, *B. pleurothalloides*, *B. subsessile*, *B. florulentum*, *B. lineari-ligulatum*, *B. ochrochlamys*, *B. zaratananae*, *B. cataractarum*, *B. lichenophyllax*, *B. microdoron*, *B. pandurella*, *B. abbreviatum*, *B. andringiranum*, *B. brachystachyum*, *B. liparidioides*, *B. pandurella*, *B. abbreviatum*, *B. andringiranum*, *B. brachystachyum*, *B. liparidioides*, *B. minax*, *B. peniculus*, *B. Rutenbergianum*, *B. septatum*, *B. variifolium*, *B. pachypus*, *B. analamazoatrae*, *B. ozycalyz*, *B. rubescens* and var. *meizobulbon*, *B. ambongense*, *B. bicoloratum* (*B. bicolor* Jum. & Perr., not Hook. f.), *B. calamarioides*, *B. cryptostachyum*, *B. lobulatum*, *B.*

obtusatum (*B. obtusum* Jum. & Perr., not Lindl.), *B. theioclhamys*, *B. sulfureum*, *B. ankaizinesis* (*B. ophiuchus* var. *ankaizinesis* Jum. & Perr.), *B. ankaratranum*, *B. antongilense*, *B. b. faonense*, *B. Henrici*, *B. Hovarium*, *B. leptoclhamys*, *B. lucidum*, *B. mandakanum*, *B. myrmecophilum*, *B. oreodorum*, *B. paleiferum*, *B. pallens* (*B. ophiuchus* var. *pallens* Jum. & Perr.), *B. rhizomatosum*, *B. rictorium*, *B. rubiginosum*, *B. simulacrum*, *B. subclavatum*, *B. subceremulatum*, *B. zaratananae*, *B. Alexandrae*, *B. inauditum*, *B. imerinense*, *Eulophidium gracillimum* (*Eulophis gracillima* Schltr.), *E. Perrieri* (*Eulophia ambongensis* Schltr.), *E. petiolatum* (*Eulophia lonchophylla* Rehb. f.), *E. quadrilobum* (*Eulophia quadriloba* Schltr.), *Eulophia Bathiei*, *E. calcarata* (*Cymbidium calcaratum* Schltr.), *E. ibityensis*, *Cymbidiella Perrieri*, *Aeranthes aemula*, *A. Bathieana*, *A. crassifolia*, *A. gracilis*, *A. Henrici*, *A. laxiflora*, *A. longipes*, *A. nidus*, *A. pusilla*, *A. rigidula*, *A. sambiranoensis*, *A. setipes*, *Jumellea ambongensis*, *J. amplifolia*, *J. ankaratrana*, *J. Bathiei*, *J. brachycentra*, *J. dendrobioides*, *J. exilipes*, *J. floribunda*, *J. Francoisi*, *J. ibityana*, *J. imerinensis*, *J. major*, *J. maxillarioides* (*Angraecum maxillarioides* Ridl.), *J. pachyceras*, *J. porrigens*, *J. rigida* and var. *altigena*, *J. similis*, *J. teretifolia*, *J. unguicularis*, *J. zaratananae*, *Angraecum abietinum*, *A. nasutum*, *A. rhizomaniacum*, *A. sedifolium*, *A. zaratananae*, *A. arachnites*, *A. Bathiei*, *A. breve*, *A. curvicalcar*, *A. dryadum*, *A. litorale*, *A. imerinense*, *A. sambiranoense*, *A. bemarivoense*, *A. microcharis*, *A. aviceps*, *A. brachyrhopalon*, *A. choetopodum*, *A. pergracile*, *A. rhopaloceras*, *A. rhynchoglossum*, *A. setipes*, *A. tamarindicolum*, *A. vesiculiferum*, *A. andringitranum*, *A. corynoceras*, *A. curvicaule*, *A. sacculatum*, *A. verecundum*, *A. vesiculatum*, *A. pauciramsum*, *A. Magdalenae*, *A. dendrobiopsis*, *A. Penzigianum*, *A. protensum*, *A. sororium*, **Sobennikoffia** n. gen., *S. robusta* (*Oeonina robusta* Schltr.), *S. Fournieriana* (*Angraecum Fournierianum* Kränzl.), *Oeonella sarcanthoides*, **Perrieriella** n. gen., *P. madagascariensis*, **Lemurella** n. gen., *L. ambongensis* (*Angroecum ambongense* Schltr.), **Neobathiea** n. name, *N. filicornu*, *N. gracilis*, *N. Perrieri* (*Aeranthus Perrieri* Schltr.), *N. sambiranoensis*, *Gussonea melinantha*, *Aerangis ikopana*, *A. Malmquistiana*, *A. monantha*, and *A. platyphylla*.—J. M. Greenman.

9796. SCHLECHTER, R. *Orchideologiae Sino-Japonicae Prodomus. Eine kritische Besprechung der Orchideen Ost-Asiens.* [Prodomus of the orchids of the Japanese Basin. A critical discussion of the orchids of eastern Asia.] Repert. Spec. Nov. Regni Veg. Beihefte 4: 1-319. 1919.—The discussion is presented under 3 captions: (1) The distribution of orchids in eastern Asia and their relation to those of neighboring countries; (2) description of new species; (3) revision of the orchids of Japan and China, known up to the present time. The following new genera, species and combinations are included, of which Schlechter is the author unless otherwise indicated: *Cypripedium Amesianum*, China; *C. lanuginosum*, China; *C. pulchrum* Ames & Schltr., China; *Paphiopedilum Esquirolei*, China; *Orchis exilis* Ames & Schltr., China; *O. Matsumurana*, Japan; *Hemipilia Amesiana*, China; *Hermidium Limprichtii*, China; *H. neotineoides* Ames & Schltr., China; *Gymnadenia monophylla* Ames & Schltr., China; *Platanthera neglecta*, Corea; *P. platycorys*, Japan; *P. stenosepala*, Formosa; *Phyllomphax Henryi*, China; *Pecteilis Henryi*, China; *Habenaria Alexandrae*, China; *H. buchneroides*, China; *H. Cavaleriei*, China; *H. chloropecten*, China; *H. gnomifera*, China; *H. herminoides* Ames & Schltr., China; *H. leucopecten*, China; *H. Limprichtii*, China; *H. Mairei*, China; *H. oligoschista*, China; *H. pandurilabia*, China; *H. spiranthiformis*, China; **Androcorys** n. gen., *A. ophioglossoides*, China; *Satyrium Henryi*, China; *S. Mairei*, China; *Pogonia parvula*, China; *Epipactis Mairei*, China; *E. setschuanica* Ames & Schltr., China; *E. squamellosa*, China; *E. tangutica*, Tibet; *E. yunnanensis*, China; *Cephalanthera elegans*, Japan; *C. Mairei*, China; *Goodyera chinensis*, China; *G. melinostele*, China; *G. yunnanensis*, China; *Coelogyne Esquirolei*, China; *Pleione Mairei*, China; *P. speciosa* Ames & Schltr., China; *Microstylis brevicaulis*, China; *M. liparidioides*, China; *M. trigonocardia*, China; *Liparis Makinoana*, Japan; *L. oxyphylla*, China; *L. pleistantha*, China; *Dendrobium Miyakei*, Formosa; *Oreorchis setschuanica* Ames & Schltr., China; *Anthogonium corydaloides*, China; *Calanthe Fauriei*, Liukiu Island; *C. liukiuensis*, Liukiu Island; *C. sacculata*, China; *C. similis*, China; *C. torifera*, Japan; *C. venusta*, Liukiu Island; *Ascotaenia elata*, China; *Bulbophyllum calodictyon*, China; *B. pteroglossum*, China; *Cirrhopetalum melanthum*, China; *C. trichocephalum*, China; *Eulophia venusta*, China; *Cymbidium aphyllum* Ames & Schltr., China; *C. serratum*, China; *C. yunnanense*, China; *Chilochista yunnanensis*, China; *Sarcochilus asperatus*, China; *Luisia Fauriei*, Liukiu Island;

Gastrochilus yunnanensis, China; *Sarcanthus flagellaris*, China; *S. Henryi*, China; *S. yunnanensis*, China; *Orchis brevicarata* (*Hempilia brevicarata* Finet); *O. Chidori Habenaria Chidori* Makino; *O. rupestris* (*Gymnadenia rupestris* Miq.); *Amitostigma* n. name, *A. basifoliatum* (*Peristylus tebralobus* var. *basifoliatus* Finet); *A. chinense* (*Cynosorchis chinensis* Rolfe); *A. Faberi* (*Habenaria Faberi* Rolfe); *A. gracile* (*Mitostigma gracile* Bl.); *A. Keiskei* (*Gymnadenia Keiskei* Maxim.); *A. Kinoshitai* (*G. Kinoshitai* Makino); *A. lepidum* (*G. lepidum* Rehb. f.); *A. monanthum* (*Peristylus monanthus* Finet); *A. parceflorum* (*P. tetralobus* var. *parceflorus* Finet); *A. pinguicula* (*Gymnadenia pinguicula* S. Moore); *A. tetralobum* (*Peristylus tetralobus* Finet); *A. Tominagai* (*Gymnadenia Tominagai* Hayata); *Perularia shensiana* (*Habenaria shensiana* Kränzl.); *P. Souliei* (*Platanthera Souliei* Kränzl.); *P. ussuriensis* (*Platanthera tipuloides* Lindl. var. *ussuriensis* Regel); *Herminium ecalcaratum* (*Peristylus ecalcaratus* Finet); *Gymnadenia camptoceras* (*Habenaria camptoceras* Rolfe); *Platanthera Mearnsii* (*H. Mearnsii* Ames); *P. halconensis* (*H. halconensis* Ames); *P. Elmeri* (*H. Elmeri* Ames); *P. fallax* (*Herminium fallax* Lindl.); *P. Mannii* (*Coeloglossum Mannii* Rehb. f.); *P. Maximowicziana*, Japan and Corea; *P. omeiensis* (*Habenaria omeiensis* Rolfe); *Phyllomphax* n. gen., *P. obcordata* (*Platanthera obcordata* Lindl.); *P. iantha* (*Platanthera iantha* Wight); *P. Helferi* (*Gymnadenia Helferi* Rehb. f.); *P. acuta* (*G. acuta* Rehb. f.); *P. Helleborine* Hook. f. (*G. macrantha* Lindl.); *P. Championi* (*Platanthera Championi* Lindl.); *P. truncatolabellata* (*Platanthera truncatolabellata* Hayata); *Habenaria calcarata* (*Glossula calcarata* Rolfe); *H. dentata* (*Orchis dentata* Sw.); *H. Finetiana*, China; *H. forceps* (*Peristylus forceps* Finet); *H. formosana* (*Coeloglossum formosanum* Matsum. & Hayata); *H. Hayataeana*, Formosa; *Epipogon kusukusense* (*Galera kusukusensis* Hayata); *E. Makinoanum* (*E. nutans* Makino, not Rehb. f.); *Spiranthes suishanensis*, Formosa; *Erythroides chinensis* (*Physurus chinensis* Rolfe); *E. formosana*, Formosa; *Cystopus Tashiroi* (*Anoetochilus Tashiroi* Maxim.); *Cheirostylis Takeoi* (*Arisanorchis Takeoi* Hayata); *Hetaeria exigua* (*Spiranthes exigua* Rolfe); *Coelogyne stricta* (*Cymbidium strictum* D. Don); *Dendrochilum formosanum* (*Platyclinis formosana* Schltr.); *Pleione amoena* (*Pogonia pleionoides* Kränzl.); *P. Henryi* (*Coelogyne Henryi* Rolfe); *Microstylis microtanthia* (*M. minutiflora* Rolfe, not Schltr.); *Liparis bicallosa* (*Bletia bicallosa* D. Don); *Eria reptans* (*Dendrobium reptans* Fr. & Sav.); *Oreorchis gracillima* (*O. gracilis* var. *gracillima* Hayata); *O. subcapitata*, Formosa; *Cremastra lanceolata* (*Pogonia lanceolata* Kränzl.); *Calypso speciosa*, Japan; *Calanthe Pantlingii* (*C. tricarinata* K. & P., not Lindl.); *Pachystoma formosanum* (*P. chinense* Hayata, not Lindl.); *Bulbophyllum ambrosia* (*Eria ambrosia* Hance); *Cirrhopetalum Makinoanum* (*C. boninense* Makino, not Schltr.); *Geodorum densiflorum* (*Limodorum densiflorum* Lam.); *Lissochilus explanatus* (*Eulophia explanata* Lindl.); *L. obtusus* (*Cyrtopera obtusa* Lindl.); *L. flavus* (*C. flava* Lindl.); *Eulophia Hildebrandii*, China; *Cymbidium aberrans* (*Yoania aberrans* Finet); *C. sundaicum* (*C. ensifolium* J. J. Sm., not Sw.); *Thriaspium auriferum* (*Dendrobium auriferum* Lindl.); *T. formosanum* (*Sarcophilus formosanus* Hayata); *T. kusukuense* (*S. kusukuensis* Hayata); *T. pendulicaule* (*Dendrobium pendulicaule* Hayata); *T. Pricei* (*Dendrocolla Pricei* Rolfe); *T. Saruwatarii* (*Sarcophilus Saruwatarii* Hayata); *Ascentrum pumilum* (*Saccolabium pumilum* Hayata); *Holcoglossum* n. gen., *H. quasipinifolium* (*Saccolabium quasipinifolium* Hayata), Formosa; *Trichoglottia breviraecema* (*Cleisostoma breviraecema* Hayata); *T. oblongisepala* (*C. oblongisepala* Hayata); *Gastrochilus Fargesii* (*Saccolabium Fargesii* Kränzl.); *G. formosanus* (*S. formosanum* Hayata); *G. fuscopunctatus* (*S. fuscopunctatum* Hayata); *G. matsuran* (*S. Matsuran* Makino); *G. retrocallosus* (*S. retrocallosus* Hayata); *G. Somai* (*S. Somai* Hayata); *G. toramanus* (*S. toramanus* Makino); *Pomatocalpa acuminatum* (*Cleisostoma acuminatum* Rolfe); *P. brachybotryum* (*C. brachybotrya* Hayata); and *Anotia hainanensis* (*Vanda hainanensis* Rolfe).—J. M. Greenman.

9797. SCHULZ, O. E. Bemerkungen zur Gattung *Pantorrhynchus* Murbeck. [Observations on the genus *Pantorrhynchus* Murbeck.] Repert. Spec. Nov. Regni Veg. 18:331. 1922.—*Trachystoma Ballii* O. E. Schulz var. *leiocarpum* (Murbeck) is proposed as a new combination.—J. M. Greenman.

9798. SCHULZ, O. E. Neue asiatische Cruciferen. [New Asiatic Cruciferae.] Repert. Spec. Nov. Regni Veg. 17:289-290. 1921.—The following new species and varieties are described: *Cardamine Hickinii*, *C. multijuga* Franchet var. *gracilis*, *Dontostemon dentatum* (Bunge) Ledeb. var. *macranthum*, *Erysimum Schneideri*, *Hemilophia pulchella* Franchet var. *pilosa*, and *Malcolmia africana* (L.) R. Br. var. *gracilis*.—J. M. Greenman.

9799. SMIRNOW, PAUL. Die neuen russischen *Stipa*-Pennata-Arten. [The new species of *Stipa* Pennata.] Repert. Spec. Nov. Regni Veg. 21: 231-235. 1925.—The following new species and form are described: *Stipa rubens*, Siberia, Turkestan; *S. kirghisorum*, Turkestan; Mongolia; *S. trichoides*, Turcomania; *S. turcomanica*, Turcomania; and *S. macroglossa* with its form *pubescens*, Turkestan.—R. E. Woodson, Jr.

9800. SMITH, HARRY. Zwei neue *Saxifraga* -Arten aus dem Himalaya. [Two new species of *Saxifraga* from the Himalayas.] Repert. Spec. Nov. Regni Veg. 20: 16-17. 1924.—The following new species from the Central Asiatic Plateau are described fully: *Saxifraga Engleriana* and *S. exigua*.—R. E. Woodson, Jr.

9801. SMITH, WILLIAM WRIGHT, AND GEORGE FORREST. New *Primulaceae*. Notes Roy. Bot. Gard. Edinburgh 1923 (68): 31-56. 1923.—The following new species and varieties are described along with notes on a few previously published. The descriptions are mostly in Latin. *Primula Agleniana* Balf. f. et Forrest var. *alba* Forrest, Tibet; *P. aromatica* W. W. Sm. et Forrest, West China; *P. atrotubata* W. W. Sm. et Forrest, West China; *P. aurantiaca* W. W. Sm. et Forrest, West China; *P. brachystoma* W. W. Sm., Upper Burma; *P. caldaria* W. W. Sm. et Forrest, West China; *P. caldaria* var. *nana* W. W. Sm. et Forrest, Yang-dza Shan; *P. calliantha* Franch. var. *nuda* Farrer mss., Burma; *P. Coryana* Balf. f. et Forrest mss., West China; *P. Dickieana* Watt var. *Pantlingii* (King), Southeast Tibet; *P. Dickieana* Watt var. *chlorops* W. W. Sm. et Forrest, Southeast Tibet; *P. dumicola* W. W. Sm. et Forrest, Southeast Tibet; *P. effusa* W. W. Sm. et Forrest, West China; *P. eucyclia* W. W. Sm. et Forrest, Southeast Tibet; *P. gentianoides* W. W. Sm. et Ward, West China; *P. ingens* W. W. Sm. et Forrest, West China; *P. lacerata* W. W. Sm., Northwest Burma; *P. leucops* W. W. Sm. et Ward, West China; *P. lichiangensis* Forrest var. *hapala* Balf. f. et Forrest, West China; *P. littoniana* var. *robusta* Forrest, West China; *P. malvacea* Franch. var. *alba* Forrest, West China; *Primula malvacea* Franch. var. *intermedia* W. W. Sm. et Forrest, West China; *P. melanops* W. W. Sm. et Ward; West China; *P. microstachys* Balf. f. et Forrest, West China; *P. monantha* W. W. Sm. et Forrest, West China; *P. oxygraphidifolia* W. W. Sm. et Ward, Muli Range; *P. Pauliana* W. W. Sm. et Forrest, West China; *P. pseudosikkimensis* Forrest, West China; *P. tapeina* Balf. f. et Forrest, Southeast Tibet; *P. Valentiniana* Hand.-Mzt., Burma; *P. violacea* W. W. Sm. et Ward; *P. werringtonensis* Hort. Wallace, West China; *Omphalogramma elegans* Forrest, Southeast Tibet; *O. minus* Hand.-Mzt., Southeast Tibet.—A. B. Massey.

9802. SPÄTH, HELMUTH. *Pinus ponderosa pendula*. Mitteil. Deutsch. Dendrol. Ges. 35: 349-350. 1 pl. 1925.—*Pinus ponderosa* f. *pendula* is described as a new form, having drooping branches.—J. C. Th. Uphof.

9803. SPEGAZZINI, CARLOS. *Acacieas argentinas*. [Argentine Acacias.] Bol. Acad. Nac. Cienc. Cordoba [Argentina] 26: 161-334. 21 fig. 1924.—In classifying the Acacias from Argentina diagnostic characters have been found in the following structures, the value of each of which is carefully considered: pollen, anthers, staminal filaments, leaves, petiolar glands, hairs, section of the branchlets, spines and prickles, and legumes. The *Acacieae* in Argentina include 3 genera, *Acacia* L., *Vachellia* Wight & Arn., and *Manganaroa* Speg., n. gen. These are distinguished by a Latin key, and detailed Latin descriptions are also given for each genus and species. The following species and varieties are proposed as new: *Acacia adhaerens parviceps*, *A. nitidifolia*, *A. riparia argentinensis*, *Manganaroa paniculata paraguayensis*, *M. platensis ombrophila*, *M. platensis xerophila*, *M. subsericea*, *M. velutina glabrescens*. The following new combinations are made: *Manganaroa furcata* (Gill.) Speg. (*Acacia furcata* Gill.), *M. monacantha* (Willd.) Speg. (*Acacia monacantha* Willd.), *M. paniculata* (Willd.) Speg. (*Acacia paniculata* Willd.), *M. martii* (Benth.) Speg. (*Acacia martii* Benth.), *M. platensis* (Mang.) Speg. (*Acacia platensis* Mang.), *M. velutina* (DC.) Speg. (*Acacia velutina* DC.), *Vachellia astringens* (Gill.) Speg. (*Prosopis astringens* Gill.) and *V. lutea* (Mill.) Speg. (*Acacia lutea* Mill.). Each species is illustrated, and all species and varieties are accompanied by very detailed Spanish descriptions and observations. Following the text are 5 analytical keys, distinguishing the species (a) when complete specimens are available, (b) by simple branchlets, (c) by simple leaves, (d) by leaflets alone, (e) by flower-clusters alone. A considerable bibliography is added.—F. W. Pennell.

9804. SPEGAZZINI, CARLOS. Nuevas notas cactológicas. [New notes on Cactaceae.]

Anal. Soc. Cien. Argentina 99: 85-156. 18 fig. 1925.—Notes, including statement of habitat and descriptive observations, are given for 52 South American species of Cactaceae in the author's herbarium. Among these is *Maihueniopsis* n. gen. and new species and varieties as follows: from Argentina, *Cereus roseiflorus*, *Gymnocalycium brachypetalum*, *Lobivia hyalacantha*, *L. oreopepon*, *Maihueniopsis molinoi*, *Opuntia halophila*, *O. prasina*, *O. subsphaerocarpa*, and *O. tuna-blanca*; from Brazil, *Echinopsis leucantha brasiliensis*, *Leocereus paulensis*, and *Parodia brasiliensis*; from Uruguay, *Opuntia atro-virens*. The following new combinations are formed: *Gymnocalycium baldianum* (Speg.) (*Echinocactus baldianus* Speg.), *G. chubutense* (Speg.) (*E. gibbosus chubutensis* Speg.), *G. leptanthum* (Speg.) (*E. platensis leptantha* Speg.), *G. loricatum* (Speg.) (*E. loricatus* Speg.), *G. parvulum* (Speg.) (*E. platensis parvula* Speg.), and *Maihuenia patagonica* (Phil.) (*Opuntia patagonica* Phil.). A Latin analytical key is given, distinguishing the species of *Gymnocalycium*. Supplementary to this paper is an index to all the Cactaceae described or mentioned in the publications of the author.—*F. W. Pennell*.

9805. SPEGAZZINI, CARLOS. Una nueva especie argentina del género "Prosopanche." [A new Argentine species of the genus "Prosopanche."] Anal. Soc. Cien. Argentina 92: 251-257. 7 fig. 1921.—*Prosopanche mazzuchii* n. sp., collected by Andreas Mazzuchi in the province of Santiago del Estero, is described in Latin and in Spanish and is very fully described and contrasted with other species of the genus.—*F. W. Pennell*.

9806. SPRAGUE, T. A. Alyogyne or Allogyne. Kew Bull. 1925: 41. 1925.—The author considers *Alyogyne* the correct form.—*T. J. Fitzpatrick*.

9807. STEWART, GEORGE. Key to the cultivated wheat varieties of France. Jour. Amer. Soc. Agron. 17: 741-747. 1925.

9808. THELLUNG, A. Drei neue Amarantus-Arten aus Bolivia. [Three new species of *Amarantus* from Bolivia.] Repert. Spec. Nov. Regni Veg. 21: 322-325.—The following new species are described in detail: *Amarantus Asplundii*; *A. Buchtienianus*; and *A. affinis*.—*R. E. Woodson, Jr.*

9809. THELLUNG, A. Ein neues *Lepidium* aus Argentinien. [A new *Lepidium* from Argentina.] Repert. Spec. Nov. Regni Veg. 21: 254-256. 1925.—The following new species and varieties are described: *Lepidium Parodii* with vars. *integrisculum* and *divisiusculum*.—*R. E. Woodson, Jr.*

9810. TURRILL, W. B. Notes on Cyperaceae: II. Kew Bull. 1925: 67-76. 1925.—The new species delimited are: *Cyperus Mossii*, Transvaal; *C. multiglumis*, Transvaal; *C. nervosa-striatus*, Transvaal; *C. tschinsendensis*, Congo; *Mariscus angularis*, Cape Province; *Scirpus minutus*, Cape Province; *Ficinia dura*, Cape Province; *Bulbostylis stricta*, Rhodesia; *Fuirena Moiseri*, northern Nigeria; *Tetraria compressa*, Cape Province; *T. Fourcadei* Turrill & Schonland, Cape Province; *T. glacilis*, Cape Province; *T. Schonlandii*, Cape Province; those by S. SCHONLAND and W. B. TURRILL are: *Bulbostylis Moggii*, Bechuanaland; *Tetraria Galpinii*, Cape Province; *T. maculata*, Cape Province; *T. pubescens*, Cape Province; and *T. vaginata*, Cape Province.—*T. J. Fitzpatrick*.

9811. TURRILL, W. B. Notes on the flora of the Balkan Peninsula. Kew Bull. 1925: 34-35. 1925.—The author describes as new the varieties *Abies alba* Mill. var. *acutifolia* and *Onosma echinoides* L. var. *Stojanoffii* from Bulgaria. Notes are given on *Iberis acutiloba* and *Aeluropus repens*.—*T. J. Fitzpatrick*.

9812. UGRINSKY, A. K. Die Gesamtart *Iris flavissima* Pall. [The collective species *Iris flavissima* Pall.] Repert. Spec. Nov. Regni Veg. Beihefte 14: 1-40. 4 pl. 1 map. 1922.—A rather extended treatment is given of the literature, synonymy, geographical distribution, taxonomy, morphology, and phylogeny of the species.—*R. E. Woodson, Jr.*

9813. ULBRICH, E. Leguminosae asiaticae novae vel criticae. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 83-90. 1921.—Three new species are described: *Astragalus schneideri* from China, *Hedysarum tongolense* from Tibet, and *Oxytropis oedistyla* from Japan. A new combination is made in *Gueldenstaedtia*, and notes are given on various species of *Astragalus*.—*F. W. Pennell*.

9814. ULBRICH, E. Ranunculaceae novae vel criticae V. Die grossblütigen Ranunculinae der Hochanden Südamerikas [The large-flowered Ranunculinae of the high Andes of South America], *Rhopalopodium Ulbrich* n. gen., *Aspidophyllum Ulbr.* n. gen. und *Lac-*

copetalum Ulbr. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 251-272. 1922.—These three genera are carefully described and a key is given contrasting them with their nearest relatives. *Aspidophyllum clypeatum*, *Rhopalopodium flavum* and *R. Weberbaueri*, all collected by Weberbauer in Peru, are described as new, and the following new combinations or names are proposed for species of *Rhopalopodium*: *R. cochlearifolium* (R. & P.) Ulbr., *R. gusmannii* (Humb.) Ulbr., *R. haemanthum* Ulbrich, *R. raimondii* (Wedd.) Ulbr., and *R. ranunculinum* (DC.) Ulbr. New varieties are proposed in *Laccopetalum* and *Rhopalopodium*.—F. W. Pennell.

9815. ULBRICH, E. *Species et sectiones africanæ novæ generis Hibiscus L.* Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 157-171. 1922.—Eighteen sections of *Hibiscus* are recognized as occurring in Africa, and certain species are discussed. The following species are described as new: *Hibiscus ambalacensis* from Somaliland, *H. baumannii* from Togo, *H. campanulifolius* from Southwest Africa, *H. conradsi* from the central lake region, *H. ellenbeckii* from Abyssinia, *H. fischeri* from East Africa, *H. imerinensis* from Madagascar, *H. kuntzei* from the Cape, *H. microcalycinus* from Transvaal, *H. neumannii* from Abyssinia, *H. seineri* from Bechuanaland and *H. serpyllifolius* from Natal. Two varieties of *H. fleckii* Gürke from Southwest Africa are also proposed.—F. W. Pennell.

9816. URBAN, IGN. *Phoradendron und Phoradendrum*. Repert. Spec. Nov. Regni Veg. 17: 251-253. 1921.

9817. URBAN, I. *Plantæ caribææ*. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 25-30. 1921.—As new to science are proposed *Basanacantha martinicensis* from Martinique, *Sloanea truncata* from Guadeloupe, and *Capparis trinitensis* and *Pachira trinitensis* from Trinidad. A new combination is made in *Uragoga*, and other species of *Sloanea* and *Uragoga* are discussed.—F. W. Pennell.

9818. URBAN, I. *Plantæ jamaïcenses*. Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 21-24. 1921.—*Polygonum spectabile* Mart. is redescribed from Jamaican plants, while as new species from Jamaica are proposed *Eupatorium platychaetum* and *Salvia wilsonii*.—F. W. Pennell.

9819. URBAN, IGN. *Sertum antillanum*. XIV, XV, XVI, XVII. Repert. Spec. Nov. Regni Veg. 18: 17-26, 113-122, 187-199, 363-375. 1922.—In continuation of his studies on the West Indian flora the author has published the following new genera, species, varieties and combinations of flowering plants: *Podocarpus Ekmanii*, *Annona sulcata*, *Reynosia truncata*, *Rheedia polyneura*, *Cinnamodendron cubense*, *Lunania pachyphylla*, *Ginoria parviflora*, *G. Koehneana*, *Lyonia brachytricha*, *L. longipes*, *Solonia* n. gen. of the Myrsinaceæ, *S. reflexa*, *Melananthus cubensis*, *Sapphoa* n. gen. of the Acanthaceæ, *S. rigidifolia*, *Ariadne* n. gen. of the Rubiaceæ, *A. Ekmanii*, *Coccoloba acutissima*, *Erythroxylon Lindelleanum*, *Amyris polyneura*, *Tetragastris cubensis*, *Malpighia apiculata*, *Salacia Wrightii* (*S. verrucosa* Ch. Wright, not Wight), *Colubrina obtusata*, *Reynosia excisa*, *R. orbiculata* (*Rhamnidium orbiculatum* Britton & Wilson), *Montezuma cubensis* (*Maga cubensis* Britton & Wilson), *Casearia crassinervis*, *Haenianthus variifolius*, *Callicarpa oblanceolata*, *C. maestrensis*, *Henoonia angustifolia*, *Tabebuia leptopoda*, *Viburnum cubense*, *V. corymbosum*, *Galactia rudolphoides* (Griseb.) Penth. & Hook. var. *haitiensis*, *Malpighia micropetala*, *Croton origanifolius* Lam. var. *abbreviatus*, *Croton chaetodus* Urb. var. *gonavensis*, *Alchornea haitiensis*, *Acalypha arcuata*, *Leonardia* n. gen. of the Euphorbiaceæ, *L. haitiensis*, *Abutilon Leonardi*, *Lunania Buchii*, *Begonia Abbottii*, *B. domingensis* A. DC. var. *oligostemon*, *B. barahonensis* (B. Plumieri A. DC. var. *barahonensis* O. E. Schulz), *Lyonia furcyensis*, *Marsdenia dictyophylla*, *Lippia armata*, *L. spinifera*, *Salvia Abbottii*, *Tabebuia gonavensis*, *Dicliptera obtusifolia* Urb. var. *ciliifera*, *Guettarda spinifera*, *Palicourea patens* (*Psychotria patens* Sw.), *Picrasma cubensis* Radlk. & Urb., *Phyllanthus anisophyllus*, *Reynosia domingensis*, *Sloanea ilicifolia*, *Ouratea lenticellosa*, *Psidium acranthum*, *Calyptanthus compressa*, *Eugenia Brownei*, *Salvia parviflora*, *Vitex integrifolia*, *Cestrum dolichanthum*, *Tabebuia Mazonii*, *Jacaranda Abbottii*, *J. variifolia*, *Gesneria heteroclada*, *Guettarda Abbottii*, and *Senecio samanensis*.—J. M. Greenman.

9820. URBAN, IGN. *Sertum antillanum*. XX. XXI. Repert. Spec. Nov. Regni Veg. 20: 297-313; 337-352. 1924.—This series is continued, with descriptions of the following new genera, species, and combinations: *Hypoxis domingensis*, Santo Domingo; *Goerziella* n. gen. of the Amarantaceæ, *G. minima* (*Amaranthus minimus* Standley), Cuba; *Fagara Ekmanii*,

Cuba; *F. organosia*, Cuba; *F. dictyophylla*, Cuba; *F. nannophylla*, Cuba; *Castela calcicola* Ekman (*Castelaria calcicola* Britton & Small); *C. jacquiniifolia* Ekman (*Castelaria jacquiniifolia* Small); *Alvaradoa psilophylla*, Cuba; *Tapura orbicularis* Ekman, Cuba; **Neoregnellia** n. gen. of the Sterculiaceae, *N. cubensis*, Cuba; *Samyda microphylla*, Cuba; **Ekmanianthe** n. gen. of the Bignoniaceae, *E. longiflora* (*Tecoma longiflora* Griseb.), Santo Domingo, Cuba; *E. actinophylla* (*T. actinophylla* Griseb.), Cuba; *Barleriola Reedii* Ekman, Cuba; **Dasytropis** n. gen. of the Acanthaceae, *D. fragilis*, Cuba; **Ottoschmidtia** n. gen. of the Rubiaceae, *O. dorsiventralis*, Cuba; *Pilea samanensis*, Santo Domingo; *P. leptogramma*, Santo Domingo; *Leptogonum molle*, Santo Domingo; *Trichilia excisa*, Cuba; *Laplacea cymatoneura*, Santo Domingo; *Clusia Abbottii*, Santo Domingo; *Eugenia dictyophylla*, Santo Domingo; *E. Abbottiana*, Santo Domingo; *Mouriria samanensis*, Santo Domingo; *Limnanthemum Ekmanii*, Cuba; *Ipomoea samanensis*, Santo Domingo; *Lippia variifolia*, Cuba; *L. nipensis*, Cuba; *Callicarpa floccosa*, Cuba; *C. areolata*, Cuba; *Vitex multidentata*, Cuba; *Clerodendron brachypus*, Cuba; *C. nipense*, Cuba; *Salvia cristallensis*, Cuba; *Hyptis confluentis*, Cuba; *Anthacanthus nannophyllus*, Cuba; *Rondeletia barahonensis*, Santo Domingo; *Stevensia samanensis*, Santo Domingo; and *Borreria litoralis*, Santo Domingo.—*R. E. Woodson, Jr.*

9821. URBAN, IGN. **Sertum antillanum**. XXII, XXIII. Repert. Spec. Nov. Regni Veg. 21: 53-75. 2 pl. 213-230. 2 pl. 1925.—The following new genera, species, and variety are described in detail: *Hymenocallis stenophylla*, Cuba; *Phoradendron lamprophyllum*, Cuba; *Dendrophthora corymbosa*, Cuba; *D. nipensis*, Cuba; *D. brachyclada*, Cuba; *D. longipes*, Cuba; *D. Ekmanii*, Cuba; *D. moniliformis*, Cuba; *D. picotensis*, Cuba; *D. lanceifolia*, Cuba; *D. laxiflora*, Cuba; *D. maestrensis*, Cuba; *D. excisa*, Cuba; *Hyperbaena obovata*, Cuba; *H. paucinervis*, Cuba; *H. columbica* (Eichl.) Miers var. *excisa*, Cuba; *H. macrophylla* Ekman, Cuba; *Cardamine porphyrophylla* Ekman, Cuba; *Erythroxylum echinodendron* Ekman, Cuba; *Amyris polymorpha*, Cuba; *Byrsonima Roigii*, Cuba; **Euleria** n. gen. of the Anacardiaceae, *E. tetramera*, Cuba; *Bumelia clarendonensis*, Jamaica; *Chrysophyllum claraense*, Cuba; *Gesneria brevifolia*, Cuba; *G. Samuelssonii*, Cuba; *G. lomensis*, Cuba; *Rhytidophyllum minus*, Cuba; *R. rhodocalyx*, Cuba; **Harnackia** n. gen. of the Compositae, *H. bisecta*, Cuba; **Feddea** n. gen. of the Compositae, *F. cubensis*, Cuba; *Drymaria adenophora*, Cuba; *Buxus rheedioides*, Cuba; *B. aneura*, Cuba; *Maytenus maestrensis*, Cuba; *Rhacoma Ekmanii*, Cuba; *Begonia maestrensis*, Cuba; *B. libanensis*, Cuba; *Plumeria casildensis*, Cuba; *P. cayensis*, Cuba; *P. cubensis*, Cuba; *Cameraria ovalis*, Cuba; *Stachytarpheta pycnodonta*, Cuba; *Solanum maestrense*, Cuba; *Cestrum turquinese*, Cuba; *C. buzoides* Ekman, Cuba; *Brunfelsia linearis* Ekman, Cuba; *Gesneria domingensis*, Santo Domingo; **Ciceronia** n. gen. of the Compositae, *C. chaptalioides*, Cuba; *Erigeron capillipes* Ekman, Cuba; *E. paucilobus*, Cuba; *E. libanensis*, Cuba; *Chaptalia Ekmanii*, Cuba; *C. crassiuscula*, Cuba; *C. nipensis*, Cuba; and *C. leptophylla*, Cuba.—*R. E. Woodson, Jr.*

9822. VESTERGREN, T. **Polygonatum multiflorum** (L.) All. × **officinale** All. i Sverige. [**Polygonatum multiflorum** (L.) All. × **officinale** All. in Sweden.] Svensk Bot. Tidskr. 19: 495-519. 5 fig. 1925.—This hybrid is known from 18 localities in Sweden and is cultivated in several gardens at Stockholm. It has been described or mentioned in literature under no less than 13 different scientific names but, nevertheless, no thorough description of it has been made until now. A detailed description of the hybrid is given in the present paper. It is especially characterized by the short-haired filaments of its stamens. The author also gives a survey of the history in literature and the synonyms of the hybrid.—*O. Heilborn.*

9823. VISCHER, WILHELM. Über die Konstanz anatomischer und physiologischer Eigenschaften von *Hevea brasiliensis* Müller Arg. (Euphorbiaceae). [Constancy of anatomical and physiological properties of *Hevea brasiliensis* Müller Arg.] Verh. Naturf. Ges. Basel. 35: 174-185. 4 fig. 1923.

9824. WANGERIN, W. **Generis Statice species et varietates novae**. I. Repert. Spec. Nov. Regni Veg. 17: 398-402. 1921.—The following new species and varieties are described: *Statice fallax* Cosson, Morocco; *S. Dielsana*, Tibet; *S. ovalifolia* Poir. *balearica*, Balearic Islands; *S. Bollei* Webb, Canary Islands; *S. bellidifolia* (Gouan) DC. var. *compacta*, Greece; and *S. bellidifolia* var. *Balansae*, Asia Minor.—*J. M. Greenman.*

9825. WARBURG, O. **Plantae novae borneenses**. Repert. Spec. Nov. Regni Veg. 18:

327-330. 1922.—The following new species of plants of Borneo are described: *Elaeocarpus oxyadenius*, *E. longibarbatulus*, *E. pachyophrys*, *E. Beccarii*, *E. microphyllus*, *Schima Beccarii*, *Begonia Beccarii*, *Pentace oligoneura*, *Buettneria Beccarii*, and *Burmannia graminifolia*.—*J. M. Greenman*.

9826. WIDDER, F. J. Eine neue Pflanze der Ostalpen—*Doronicum* (Subsectio *Macrophylla*) *cataractarum*—und ihre Verwandten. [A new plant from the eastern Alps, and its relatives.] *Repert. Spec. Nov. Regni Veg.* 22: 113-184. (*Repert. Eur. et Med.* 1: 737-808. 8 pl. 1925.—This is an exhaustive paper, giving a Latin description of *Doronicum cataractarum* n. sp., from the East Central Alps. Notes are added on its synonymy, morphology and localities. A description is also furnished of the other members of this section, as well as a careful comparison of this species with its relatives.—*John E. Dinsmore*.

9827. WINKLER, HUBERT. *Species novae austro-africanae*. *Repert. Spec. Nov. Regni Veg.* 18: 123-124. 1922.—The following new species are described: *Sterculia stenocarpum*, *Combretum Melchiorianum*, and *Clerodendron makanjanum*.—*J. M. Greenman*.

9828. WINKLER, HUBERT. *Urticaceae papuanae novae*. III. *Repert. Spec. Nov. Regni Veg.* 18: 238. 1922.—*Elatostema truncicola* is described as a new species from New Guinea.—*J. M. Greenman*.

9829. WOLF, EGBERT. *Berberis vulgaris* (L.) forma *ornata* Egb. Wolf. *Mitteil. Deutsch. Dendrol. Ges.* 35: 350. 1925.—*Berberis vulgaris* f. *ornata* is described as a new form. It originated from *B. vulgaris atripurpurea* Rgl. in the Forest Institut at Leningrad.—*J. C. Th. Uphof*.

9830. WOLF, EGBERT. Die Korkbäume, *Phellodendron*, im Arboretum des Leningrader Forstinstitutes. [*Phellodendron* in the Arboretum of the Forest Institute in Leningrad.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 215-218. 1 fig. 1925.—*Phellodendron piriforme* is described as a new species; its native country is unknown.—*J. C. Th. Uphof*.

9831. WOLFF, H. *Asteriscium polycephalum* Hieron. msc. aus Argentinien. *Repert. Spec. Nov. Regni Veg.* 17: 439. 1921.—*Asteriscium polycephalum* Hieron. is described as a new species from Argentina.—*J. M. Greenman*.

9832. WOLFF, H. *Azorella Dusenii* Patagonica et *A. Mutisiana* Colombiana species novae. *Repert. Spec. Nov. Regni Veg.* 17: 266. 1921.—*Azorella Dusenii* Wolff is described as a new species from Patagonia, and *A. Mutisiana* Hieron. is described as a new species from Colombia.—*J. M. Greenman*.

9833. WOLFF, H. *Didiscus buginensis* et *D. Sarasinorum* Warbg. mss. in *Herb. Berol.* *Repert. Spec. Nov. Regni Veg.* 17: 439-440. 1921.—The 2 species mentioned in the title are described as new to science; both are native of Celebes.—*J. M. Greenman*.

9834. WOLFF, H. *Mulinum famatinense* et *M. Reichei* spec. nov. austro-americanae. *Repert. Spec. Nov. Regni Veg.* 17: 441-442. 1921.—The former of the 2 species mentioned in the title is native of Argentina, the latter of Chile.—*J. M. Greenman*.

9835. WOLFF, H. *Pimpinella Leouwenii* spec. nov. von Java. *Repert. Spec. Nov. Regni Veg.* 20: 159-160. 1924.

9836. WOLFF, H. *Pleurosperma nova* Tibetiae orientalis. *Repert. Spec. Nov. Regni Veg.* 21: 241-244. 1925.—The following new species are described in detail: *Pleurosperma crassicaule*; *P. microsciadium*; *P. microphyllum*; *P. longipetiolatum*; *P. heterosciadium*; *P. albimarginatum*; and *P. grandifolium*.—*R. E. Woodson, Jr.*

9837. WOLFF, H. *Spermolepis hawaiiensis* spec. nov. *Repert. Spec. Nov. Regni Veg.* 17: 440-441. 1921.—The species described is a native of Hawaii and is based on specimens collected by Hillebrand, distributed under the name *Caucalis daucoides*.—*J. M. Greenman*.

9838. WOLFF, H. *Thunbergiella* gen. nov. *Umbelliferarum Austroafricanum*. *Repert. Spec. Nov. Regni Veg.* 18: 112. 1922.—*Thunbergiella* is described as a new genus of the Umbelliferae. It is represented by 1 species, namely, *T. filiformis*, from South Africa.—*J. M. Greenman*.

9839. WOLFF, H. *Umbelliferae*. In: MILDBRAED, J. Neue Arten vom Vulkan Elgon in Uganda. [New species from the volcano Elgon in Uganda.] *Notizbl. Bot. Gart. Mus. Berlin-Dahlem* 8: 229-232. 1922.—*Lefeburia serrata*, *Malabaila elgonensis*, *Peucedanum elgonense*, *Pimpinella lindblomii*, and *Trachydium abyssinicum lindblomii* are described, the first collected by H. Granvik, the others by G. Lindblom.—*F. W. Pennell*.

9840. WOLFF, H. *Umbelliferae novae asiaticae*. II. Repert. Spec. Nov. Regni Veg. 21: 244-249. 1925.—The following new species are described in detail: *Seseli coreanum*, Korea; *Ligusticum nipponicum*, Japan; *Peucedanum Taquetii*, Korea; *Peucedanum filicinum*, Japan; *P. Cavaleriei*, China; *P. yunnanense*, China; *P. quelpaertiense*, Korea; *P. mirabile*, Korea; and *P. Miquelianum* (*Angelica Miqueliana* Maxim.)—R. E. Woodson, Jr.

REVISIONS AND MONOGRAPHS

9841. ALSTON, A. H. G. Revision of the genus *Cassipourea*. Kew Bull. 1925: 241-276. 2 fig. 1925.—The author gives a history of the genus and a key to the species. Descriptions and annotations are given to the 62 species recognized. The following are described as new: *Cassipourea euryoides*, *C. Honeyi*, *C. celastroides*, *C. obovata*, *C. trichosticha*, *C. glomerata*, *C. latifolia*, *C. peruviana*, *C. lasiocalyx*, *C. nodosa*, *C. glabra*, *C. annobonensis*, and *C. paradoxa*. New combinations from the genus *Weihia* are: *C. ceylanica*, *C. sessiliflora*, *C. Avettiae*, *C. abyssinica*, *C. Salvago-Raggei*, *C. Thomassetii*, *C. rotundifolia*, *C. mollis*, *C. insignis*, *C. Flanaganii*, *C. Gerrardii*, *C. malosana*, *C. Eickii*, *C. huillensis*, *C. Elliottii*, *C. mossambicensis*, *C. Mildbraedii*, *C. mauambensis*, *C. ruwensorensis*, *C. sericea*, *C. kamerunensis*, *C. Afzelii*, *C. plumosa*, and *C. Zenkeri*. The following new combinations are from *Dactylopetalum*: *C. Dinklagei*, *C. Rogersii*, and *C. ugandensis*. The species are mainly from Tropical Africa.—T. J. Fitzpatrick.

9842. BECKER, WILH. *Violae Mexicanae et Centrali-Americanae*. II. Repert. Spec. Nov. Regni Veg. 20: 1-12. 1924.—Descriptions are contained of the following new species and varieties: *Viola Schaffneriana*, Mexico, Guatemala; *V. chiapasiensis*, Mexico; *V. Seleriana*, Guatemala; *V. guatemalensis*, Guatemala, Mexico; *V. umbraticola* HBK. var. *glaberrima*, Mexico; *V. flagelliformis* Hemsl. var. *glabrescens*, Mexico.—R. E. Woodson, Jr.

9843. BITTER, GEORG. Aufteilung der Gattung *Bassovia* (im Dunalschen Sinne) zwischen *Solanum*, *Capsicum* und *Lycianthes*. [Division of the genus *Bassovia* (in the Dunal sense) between *Solanum*, *Capsicum* and *Lycianthes*.] Repert. Spec. Nov. Regni Veg. 17: 328-335. 1921.—The author regards the genus *Bassovia*, as defined by Dunal, referable to *Solanum*, *Capsicum* and *Lycianthes* and publishes the following new combination and new species: *Solanum sylvaticum* (*Bassovia sylvatica* Aubl.) and *Capsicum lycianthoides*. The latter is a native of Ecuador.—J. M. Greenman.

9844. BITTER, GEORG. *Ergänzungen zu Lycianthes*. I. [Additions to *Lycianthes*. I.] Repert. Spec. Nov. Regni Veg. 18: 314-321. 1922.—The following new species, varieties and combinations are proposed and described: *Lycianthes stephanocalyx* (*Solanum stephanocalyx* Brandg.); *L. medians*, Bolivia; *L. chrysothrix* Bitt. subsp. *dolichopoda*, Peru; *L. biflora* (Lour.) Bitt. var. *yunnanensis*, China; *L. macrodon* (Wall.) Bitt. var. *longifrons*, Sikkim-Himalaya; *L. lysimachioides* (Wall.) Bitt. var. *formosana*, Formosa; and *L. parasitica* (Blume) Bitt. var. *pluriflora*, Philippine Islands.—J. M. Greenman.

9845. BITTER, GEORG. *Ergänzungen zu Lycianthes*. II. [Additions to the genus *Lycianthes*. II.] Repert. Spec. Nov. Regni Veg. 20: 364-369. 1924.—The following new species and variety are described from Guatemala: *Lycianthes gorgonea*; *L. gorgonea* var. *extensidentata*; *L. nyssifolia*; and *L. inconspicua*.—R. E. Woodson, Jr.

9846. BITTER, GEORG. *Solana africana*. IV. Repert. Spec. Nov. Regni Veg. Beihefte 16: 1-320. 1923.—In extending this series of *Solanums*, chiefly from the former German colonies, the following new species, varieties, and combinations are fully described: *S. indicum* L. vars. *mesarchon*, *maroanum*, *lividum* (*S. lividum* Lk.), *immunitum*, *brevipedicellatum*, *depauperatum*, *modicearmatum*, *grandemunitum*, *Monbultorum*, *dichroanthum* (*S. dichroanthum* Damm.), *halophilum* (*S. halophilum* Pax), *Grotei* (*S. Grotei* Damm.), *pseudogeminifolium* Damm., *spathotrichum* (*S. spathotrichum* Damm.), *bukobense*, *breviaculeatum*, *sakareense* (*S. sakareense* Damm.), *kiwuense*, *Kandtii* (*S. Kandtii* Damm.), *profundelobatum*, *Jägeri* (*S. Jägeri* Damm.), *Carvalhoi* (*S. Carvalhoi* Damm.), *suprastrigulosum*, var. *gondarensis*, *subquercinum*, *halatense*, *Arussorum*, *Eldamae*, *Busogae*; *S. bellicosum* (*S. macranthum* Pax, not Rich.); *S. usambarensis* Bitt. & Damm.; *S. mauense* Bitt.; *S. aethiopicum* L. vars. *modicelobatum*, *Giorgii* (*S. Giorgii* De Wild.), var. *armatum*; *S. gilo* Raddi vars. *ellipsoideum*, *erectifructum*, *Pierreanum* (*S. Pierreanum* Pailieux & Bois), var. *sparseaculeatum*; *S. capense* L.

vars. *Milleri* (*S. Milleri* Jacq.), *evectistellatum*, *sodomaeoides* (*S. sodomaeoides* O. K.), *Wilmsii* (*Wilmsii* Damm.), *uniradiatum*; *S. subrectemunitum*; *S. glabratum* Dun. var. *erysimifolium* (*erysimifolium* Delile); *S. sepicula* Dun. vars. *clavifrons* and *microlepis*; *S. multigladulosum* var. *multiarmatum*; *S. rigescens* Jacq. vars. *parvibaccatum*, *horridius*, *rubetorum* (*S. rubetorum* Dun.), *didymanthum* (*S. didymanthum* Dun.); *S. Galpini*; *S. denudatum*; *S. tomentosum* vars. *scabriusculum*, *longiarmatum*, *sublyratum*, *mollissimum*, *integrifolium* Flanagan Bitter; *S. Burchellii* Dun. vars. *parcearmatum* and *Schaeferi*; *S. tenuihamatum*; *S. damarense* (*S. Dinteri*; *S. supinum* Dun. vars. *leucophaeum* (*S. leucophaeum* Dun.), *aranoideum* (*S. aranoideum* Damm.), *rehobothense*, *lyratifolium* (*S. lyratifolium* Damm.); *S. albicaule* Kotschy var. *parvifrons*; *S. lamprocarpum*; *S. ochracanthum*; *S. kitivuense* Damm. vars. *glochidiatum* (*S. glochidiatum* Damm.), *Scheffleri* (*S. Scheffleri* Damm.); *S. zanzibarense* Vatke vars. *vagans* (*S. vagans* C. H. Wright) and *abbreviatum*; *S. nesiotis*; *S. nossibeense* Vatke vars. *elongatius* and *robustius*; *S. tanganikense*; *S. setaceum* Damm. var. *irakuanum*; *S. ogadense*; *S. aculeatissimum* Jacq. var. *dolichopodium*; *S. nigrivoliaceum*; *S. aculeastrum* Dun. vars. *parceaculeatum*, *exarmatum*, *albifolium* (*S. albifolium* C. H. Wright), *Conraui* (*S. Conraui* Damm.); *S. protodasyphyllum* (*S. sessilistellatum*; *S. dasyphyllum* Thonning vars. *Decaisneanum* (*S. Decaisneanum* Schimper), *semiglabrum* (*S. duplosinuatum* var. *semiglabrum* C. H. Wright), var. *inermis* (*S. duplosinuatum* var. *inermis* Damm.), var. *Kilimandschari* (*S. Kilimandschari* Damm.), *natalense*, *brevipedicellatum*, *transiens*; *S. crepidotrichum*; *S. macrocarpum* L. vars. *calvum*, var. *parcesetosum*, *columnaristellatum*, *setosiciliatum*, *primovestitum*; *S. campylacanthum* Hochst. vars. *ellipsoidum*, *mollius*; *S. malacochlamys* and var. *transgrediens*; *S. Neumannii* Damm. var. *schoense* (*S. floccisistellatum*; *S. repandifrons*; *S. Merkeri* Damm. vars. *Tobleri*, *mediidominans*, *endacanthophorum*, *intermontanum*, *ruandense*; *S. stellativillosum* and *makinduense*; *S. lachneion* Damm. vars. *abbreviatum*, *protopyrrhotrichum*, *intercedens*; *S. maranguense*; *S. verbascifrons*; *S. Bojeri* Dun. vars. *integrum*, *Deckenii* (*S. Deckenii* Damm.), *Houyuanum*; *S. ukerevense*; *S. Pembae*; *S. mesomorphum*; *S. Volkensii* Damm. var. *himatiacanthum* (*S. himatiacanthum* Damm.); *S. delagoense* Dun. vars. *tomentellum* (*S. tomentellum* Klotzsch), *munitius*, *brachyastrotichum*, *obliquum* (*S. obliquum* Damm.), var. *astrochlaenoides* (*S. astrochlaenoides* Damm.), *Fischeri* (*S. Fischeri* Damm.), var. *karagweanum*, var. *benguelense* (*S. benguelense* Peyritsch); *S. incanum* L. vars. *brevitomentosum*, *pluribaccatum*, *unguiculatum* (*S. unguiculatum* A. Rich.), var. *integrascens*, var. *kavirondoense*, var. *Lichtensteinii* (*S. Lichtensteinii* Willd.), var. *subzarmatum* (*S. subzarmatum* Dun.); *S. cerasiferum* Dun. var. *garuense*, *parcestellatum*, *kerense*, *grandiflorum*; *S. marginatum* L. f. var. *polyhoplum*; *S. dubium* Fresenius var. *dolichoplocalyx*, *S. depressum*; *S. Ellenbeckii* Damm. var. *oligopodium*. In addition, a number of subspecies are listed.—R. E. Woodson, Jr.

9847. BITTER, GEORG. *Solana nova vel minus cognita*. XXI. Repert. Spec. Nov. Regni Veg. 18: 301-309. 1922.—Notes are recorded on several species of *Solanum* and the following African plants are described as new to science: *Solanum plousianthemum* Damm. vars. *angustatum* and *kyimbilense*; *S. bansoense* Damm. var. *episporadotrichum* and subsp. *sanaganum*; *S. Welwitschii* C. H. Wright var. *laxepaniculatum*. *S. setosum* is a new combination for *Bassovia setosa* Brandg. from Mexico.—J. M. Greenman.

9848. BITTER, GEORG. *Weitere Untersuchungen über Hebecladus*. I. [Further investigations of the genus *Hebecladus*. I.] Repert. Spec. Nov. Regni Veg. 20: 372-376. 1924.—The synonymy of *Hebecladus umbellatus* Miers is exposit, and the following new species, believed to necessitate a new section for the genus, is described from Peru: *Hebecladus Weberbaueri*.—R. E. Woodson, Jr.

9849. BITTER, GEORG. *Zur Gattung Physalis*. II. [The genus *Physalis*. II.] Repert. Spec. Nov. Regni Veg. 20: 369-372. 1924.—The following new species and combination are described from Mexico: *Physalis melanocystis* (*Withania melanocystis* Robinson); *P. capsicoides*.—R. E. Woodson, Jr.

9850. BITTER, GEORG. *Zur Gattung Sessea*. [The genus *Sessea*.] Repert. Spec. Nov. Regni Veg. 18: 199-225. 1922.—A detailed study of the genus *Sessea* has resulted in the publication of the following new species: *Sessea crassivenosa* and subsp. *macrocalyx* and *multivenosa*, Ecuador; *S. Sodiroi*, Ecuador; *S. hypotephrodes*, Bolivia; *S. Weberbaueri*, Peru; *S. multiflora*, Peru; *S. graciliflora*, Peru; *S. Lehmanni*, Colombia; *S. Regnellii*, Brazil; and *S. atrovirens* (*Cestrum atrovirens* Dun.).—J. M. Greenman.

9851. BITTER, GEORG. Zur Gliederung der Gattung *Saracha* und zur Kenntnis einiger ihrer bemerkenswerten Arten. I. [Systematic treatment of the genus *Saracha* and a contribution to the knowledge of some of its noteworthy species.] *Repert. Spec. Nov. Regni Veg.* 7: 338-346. 1921.—A new section is proposed to include *Saracha ciliata* Miers, *S. Weberbaueri* Damm. and two new Peruvian species, namely, *S. Lacrima- virginis* Bitt. and *S. Urbaniana* Bitt & Damm.—*J. M. Greenman.*

9852. BITTER, GEORG. Zur Gliederung der Gattung *Saracha* und zur Kenntnis einiger ihrer bemerkenswerten Arten. II. [Systematic treatment of the genus *Saracha* and a contribution to the knowledge of some of its noteworthy species.] *Repert. Spec. Nov. Regni Veg.* 18: 99-112. 1922.—The following new species and new combinations are made: *Saracha sanctae-martae*, Colombia; *S. sinuosa* (*Hebecladus sinuosus* Miers); *S. lobata*, Peru; *S. sordideviolacea*, Peru; *S. microsperma*, Ecuador; *S. caracasana*, Venezuela; and *S. chihuahuensis*, Mexico. *S. sessilis* Greene is redescribed and annotated.—*J. M. Greenman.*

9853. BITTER, GEORG. Zur Gliederung der Gattung *Saracha* und zur Kenntnis einiger ihrer bemerkenswerten Arten. IV. [Systematic treatment of the genus *Saracha* and a contribution to the knowledge of some of its noteworthy species.] *Repert. Spec. Nov. Regni Veg.* 20: 362-364. 1924.—The following species is described from Guatemala: *Saracha amphitricha*.—*R. E. Woodson, Jr.*

9854. BLAKE, S. F. On the status of the genus *Chaenocephalus*, with a review of the section *Lipactinia* of *Verbesina*. *Amer. Jour. Botany* 12: 625-640. 1925.—The genus *Chaenocephalus* clearly belongs in the section *Lipactinia* of *Verbesina* and the author transfers its species thereto. He presents a revision of this section, recognizing 36 species, and provides a key to these.—*E. W. Sinnott.*

9855. BRADSHAW, R. V. Pacific coast species of *Lathyrus*. *Bot. Gaz.* 80: 233-261. 29 fig. 1925.—Among the 24 species presented are the following new forms: *Lathyrus Tracyi*, California, *L. nevadensis stipulaceus* (White), *L. Lanszwirtii aridus* (Piper), *L. Bolanderi quercetorum* (Heller), *L. Bolanderi violaceus* (Greene), and *L. laetiflorus Alefeldi* (White).—*B. W. Wells.*

9856. BRAID, K. W. Revision of the genus *Alphitonia*. *Kew Bull.* 1925: 168-186. 13 fig. 1 map. 1925.—*Alphitonia* belongs to the family Rhamnaceae. The species are mainly Australasian or Malaysian. Thirteen species are recognized, of which the following are described as new: *Alphitonia excelsa* Reissek var. *acutifolia*, *A. Petriei* Braid & White, *A. Whitei*, *A. obtusifolia*, *A. obtusifolius* var. *tenuis*, and *A. philippinensis*.—*T. J. Fitzpatrick.*

9857. CAMUS, AIMÉE. Le genre *Nastus* Juss. [The genus *Nastus* Juss.] *Bull. Soc. Bot. France* 72: (5 ser. 1): 22-27. 1925.—The author calls attention to the fact that certain authors have classified plants in the genus *Nastus* that are very far removed from it. He defines the genus precisely and gives a dichotomous key to the species as well as specific descriptions. With the exception of *N. borbonicus* Gmelin and of *N. emimensis* A. Camus (= *N. borbonicus* Gmel var. *emimensis* Baker) all the species are new. These are: *N. elongatus*, *N. madagascariensis*, *N. manongarivensis*, *N. tsaratananensis*, *N. Perrieri*, *N. aristatus*. These species are native to Madagascar.—*R. Douin* (transl. by *E. B. Payson*).

9858. E[VANS], A. W. [Rev. of: BRITTON, N. L., AND J. N. ROSE. The Cactaceae: descriptions and illustrations of the cactus family. Vol. 4. vii + 318. 37 pl. (28 col.) 263 fig. Carnegie Institution of Washington Publication 248: Washington, 1923.] *Amer. Jour. Sci.* 7: 434-435. 1924.—An appreciative account is given of the concluding volume of the work.—*T. J. Fitzpatrick.*

9859. GAYER, JULIUS. Die systematische Gliederung von *Vitis vinifera* L. [The systematic organization of *Vitis vinifera* L.] *Mitteil. Deutsch. Dendrol. Ges.* 35: 284-287. 1925.—According to Andrasovsky *Vitis vinifera* is composed of 5 distinct species. A list is given of 8 hybrids.—*J. C. Th. Uphof.*

9860. GUILLAUMIN, A. Matériaux pour la flore de la Nouvelle Calédonie. XVIII. Revision des Santalacées. [Materials for the flora of New Caledonia. XVIII. Revision of the Santalaceae.] *Bull. Soc. Bot. France* 72: 89-92. 1925.—The Santalaceae of New Caledonia belong to the genera *Santalum* and *Exocarpus*. It follows from the researches of the author that *S. austro-caledonicum* Vieill., *S. Homei* Seem., and *S. album* L. var. *aneitum* G. Meur. are

identical and that *S. austro-caledonicum* could not be considered as a variety of *S. pyrularicum* of the Hawaiian Islands as Meurisse would wish. Finally it is considered that 2 species of the genus *Santalum* are to be retained, *S. austro-caledonicum* and *S. album*. The genus *Excocarpus* comprises 4 species: *E. neo-caledonicus* Schltr. & Pilg., *E. phyllantoides* Endl. van *artensis* Pilg., *E. spathulatus* and a new species, *E. pseudo-Casuarina*, which the author described.—*R. Douin* (transl. by E. B. Payson).

9861. HUTCHINSON, J. [Rev. of: CHENEY, R. H. *Coffee, a monograph of the economic species of the genus Coffea* L. 244 p. 77 pl., 8 maps. New York University Press: New York 1925.] Kew Bull. 1925: 286-287. 1925.—The reviewer states that this is a book useful to the botanist, economist, grower, and antiquarian, but criticises the poor illustrations.—*T. J. Fitzpatrick*.

9862. LEWIN, KURT. Systematische Gliederung und geographische Verbreitung der Arctotideae-Arctotidineae. [Systematic classification and geographical extension of the Arctotideae-Arctotidineae.] Repert. Spec. Nov. Regni Veg. Beihefte 11: 1-75. 6 pl. 1922.—An extensive morphological, taxonomic, and geographical treatment of the Arctotideae-Arctotidineae is undertaken, and the following new species from South Africa are described: *Haplocarpha serrata*, *H. ovata*, *H. hastata*, *Actotis sulocarpa*, *A. setosa*, *A. graminea*, *A. caudata*, *A. rotundifolia*, *A. Schlechteri*, *A. macrostylis*, *A. suffruticosa*, *A. acuminata*, and *A. sessilifolia*. The following combinations appear to be new: *Arctotheca Forbesiana* (*Cryptostemma Forbesiana* Harv.), *A. calendulacea* (*C. calendulacea* R. Br.) and var. *hypochondriaca* (DC.), *A. nivea* (*Microstephium niveum* Less.), *Haplocarpha parvifolia* (*Artotis parvifolia* Schlecht.), *H. hirsuta* (*Landtia hirsuta* Less.), *H. Schimperii* (*L. Schimperii* Benth. & Hook.), and *H. Rüppellii* (*L. Rüppellii* Benth. & Hook.).—*R. E. Woodson, Jr.*

9863. LEWIN, K. Zu meiner Arbeit über die Arctotidineae. Repert. Spec. Nov. Regni Veg. 18: 300. 1922.

9864. LIMPRICHT, W. Studien über die Gattung Pedicularis. [Studies on the genus Pedicularis.] Repert. Spec. Nov. Regni Veg. 20: 161-265. 1924.—A discussion of the distribution and phylogeny of this genus is given, together with a thorough treatment of its taxonomy.—*R. E. Woodson, Jr.*

9865. MAIDEN, J. H. A critical revision of the genus Eucalyptus. Vol. VII. Part 5. P. 203-238. 4 pl. Alfred James Kent: Sydney, 1925.—The author discusses the leaf with special reference to evolution, and illustrates juvenile leaves of several species. Further illustrations are given of the seed of different species.—*J. M. Greenman*.

9866. MARKGRAF, FR. Verwandtschaftliche Übersicht der amerikanischen Rauwolfien. [Phylogenetic survey of the Rauwolfias of America.] Repert. Spec. Nov. Regni Veg. 20: 111-122. 1924.—A discussion of the phylogeny of *Rauwolfia* is accompanied by descriptions of the following new species and varieties: *Rauwolfia mollissima*, Costa Rica; *R. divergens*, Paraguay; *R. Mattfeldiana*, Brazil; *R. Duckei*, Brazil; *R. pachyphylla*, Brazil; *R. andina*, Peru; *R. canescens* L. vars. *typica* and *intermedia*, Brazil.—*R. E. Woodson, Jr.*

9867. MATTFELD, JOHANNES. Geographisch-genetische Untersuchungen über die Gattung Minuartia (L.) Hiern. [Geographical-genetical researches on the genus Minuartia (L.) Hiern.] Repert. Spec. Nov. Regni Veg. Beihefte 15: 1-228. 5 pl. (12 maps). 1922.—This work, involving the geographical distribution and phylogeny of the genus *Minuartia*, is an extension of previous studies of the author on the same general subject. Several new subspecies are introduced, and the following new combinations: *Minuartia glomerata* (M. a. B.) Degen subsp. *velutina* (*Alsine velutina* Boiss. & Orph.); *M. tenuissima* (*Alsine tenuissima* Pomet); *M. imbricata* (*Arenaria imbricata* MB.).—*R. E. Woodson, Jr.*

9868. MATTFELD, JOHANNES. Revision der Gattung Pycnophyllum Remy. [Revision of the genus Pycnophyllum Remy.] Repert. Spec. Nov. Regni Veg. 18: 167-179. 1922.—Sixteen species are recognized in this treatment of the genus. The following new species are included: *Pycnophyllum Stübelii*, Bolivia; *P. glomeratum*, Peru; *P. filiforme*, Peru; *P. mucronulatum*, Argentina; *P. Markgrafianum*, Peru; *P. spathulatum*, Bolivia; *P. macropetalum*, Peru; *P. Holleanum*, Peru; and *P. aristatum*, Peru.—*J. M. Greenman*.

9869. PERKINS, JANET. Die afrikanischen Pycnostachys-Arten. [The African species of Pycnostachys.] Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 63-77. 1921.—This revision of

the African species of *Pycnostachys* (Labiatae) gives an analytical key to the species and for each discusses synonymy and cites specimens seen. It includes the following new species: *P. ballotoides*, *P. graminifolia*, *P. kaessneri*, *P. lavanduloides*, *P. longiacuminata*, *P. pallide-caerulea*, *P. prittwitzii* and *P. togoensis*.—F. W. Pennell.

9870. PFEIFFER, H. *Conspectus Cyperacearum in America meridionali nascentium. II.* Repert. Spec. Nov. Regni Veg. 17: 227-239. 1921.—The author recognizes 24 species and several varieties of *Pleurostachys*, the enumeration of which is preceded by a key. Several species of *Rhynchospora* are also recorded. The following new species, varieties, and combinations are included: *Pleurostachys tenuiflora* Brongn. var. *elegans* (*P. elegans* Kunth); *P. paranensis* Palla vars. *ypirangensis* and *Dusenii*, Brazil; *P. foliosa* Kunth var. *Gaudichaudii*, Brazil; *P. cimaensis*, Brazil; *P. densefoliata*, Brazil; *P. Beyrichii* Steud. var. *panicoides*, Brazil; *P. stricta* Nees var. *angustocarpa*, Brazil; *P. millegrana* Steud. var. *grandifolia* (*P. grandifolia* Bckl.); *Rhynchospora gigantea* Link var. *latifolia*, Brazil; *R. longibracteata* Bckl. var. *minor*, Brazil; *R. Pittieri* (*Dichromena Pittieri* Standl.), Colombia; and *R. ebracteata* (*D. ebracteata* Standl.), Tobago and Venezuela.—J. M. Greenman.

9871. PFEIFFER, H. *Genera Cyperacearum Australiae recognita. I.* Repert. Spec. Nov. Regni Veg. 21: 362-367. 1 pl. 1925.—This new series opens with a revision of the genus *Caustis* R. Br. The following new combinations and form are included: *Caustis filifolia* (*Didymonema filifolia* Presl.); *C. dioica* R. Br. f. *multiandra*; and *C. pilisepala* (*Restio pilisepala* Steud.).—R. E. Woodson, Jr.

9872. POHLE, R. *Draba asiaticae. Systematik und Geographie nord- und mittelasiatischer Draben.* [Drabas of Asia. A systematic and geographic treatment of the Drabas of northern and central Asia.] Repert. Spec. Nov. Regni Veg. Beihefte 32: 1-225. 1925.—The author recognizes 55 species; these are grouped in 9 sections. Several of the older species have been emended. Numerous varieties and forms are designated as new.—J. M. Greenman.

9873. SAINT-YVES, A. *Le Festuca ovina L. subsp. indigesta Hack.* Bull. Soc. Bot. France 72: 995-1012. 1925.—A revision of the subspecies *indigesta* of *Festuca ovina* L., which includes 6 varieties and 7 subvarieties, of which he gives the diagnoses. An analytic key to these varieties and subvarieties facilitates their determination. The principal facts brought out are as follows: The varieties *Litardieri* St.Y. and *durissima* (Hack.) St.Y. are intermediary between the subspecies *eu-ovina* and *indigesta*, which are still retained by the variety *valentina* of the first of these subspecies; there are no intermediary forms between the variety *Litardieri* and the varieties *durissima* or *indigesta* (Boiss.) St.Y.; on the contrary, there are intergrading forms between the varieties *durissima* and *indigesta* and also between the varieties *indigesta* and *Hackeliana* St.Y.; the affinities between the varieties *indigesta* and *punchoria* (Sm.) St.Y. necessitate their classification in the same subspecies; there are no intergrading forms between the Asiatic groups with unequal foliar sclerenchymatous cells and the European groups with sclerenchymatous cells all equal among themselves.—R. Douin (transl.).

9874. SCHLECHTER, R. *Die Thismieae.* Notizbl. Bot. Gart. Mus. Berlin-Dahlem 8: 31-45. 1921.—This paper presents a revision of the tribe Thismieae of the Burmanniaceae. It contains analytical keys to the genera and species, synonymy and citation of specimens. Two new genera are described: *Scaphiophora*, based upon *Thismia appendiculata* Schlechter from New Guinea; and *Triurocodon*, based upon *Thismia glaziovii* Pouls from Brazil. Beside these, new combinations are made in *Sarcosiphon* from Borneo, New Guinea, Tasmania, New Zealand and Illinois; and in *Myostoma* from Brazil.—F. W. Pennell.

9875. SCHLECHTER, R. *Gymnosiphon Bl. and Ptychomeria Bl.* Repert. Spec. Nov. Regni Veg. 17: 253-258. 1921.—The author reviews the history of *Gymnosiphon* Blume and *Ptychomeria* Benth. Nine species of the former and 21 of the latter are enumerated. The following new combinations are included: *Ptychomeria Poeppigiana* (*Benitzia Poeppigiana* Karst.), *P. suaveolens* (*B. suaveolens* Karst.), *P. Glaziovii* (*Gymnosiphon Glaziovii* Urb.), *P. pusilla* (*G. pusillus* Urb.), *P. sphaerocarpa* (*G. sphaerocarpus* Urb.), *P. parviflora* (*G. parviflorus* Urb.), *P. portoricensis* (*G. portoricensis* Urb.), *P. jamaicensis* (*G. jamaicensis* Urb.), *P. Fawcettii* (*G. Fawcettii* Urb.), *P. orobanchoides* (*G. orobanchoides* Rusby), *P. usambarica* (*Dictyostegia usambarica* Engl.), and *P. squamata* (*Gymnosiphon squamatus* Wright).—J. M. Greenman.

9876. SHERFF, EARL EDWARD. *New or otherwise noteworthy Compositae II.* Bot. Gas. 80: 367-389, Pl. 19-22. 1925.—The following new species are described with Sherff as the authority unless otherwise indicated: *Coreopsis senaria* Blake & Sherff, Peru; *C. parviceps* Blake & Sherff, Peru; *C. glaucodes* Blake & Sherff, Peru; *C. microlepis* Blake & Sherff, Peru; *C. polyactis* Blake & Sherff, Peru; *C. notha* Blake & Sherff, Peru; *C. elgonensis*, Uganda; *C. feruloides*, British East Africa. Amplified descriptions are given of the following: *C. Bartenianae* O. & H., *C. ochracea* O. Hoffm., *Cosmos sulphureus* var. *leiorhynchus* Griseb. New varieties are as follows: *Bidens pilosa* var. *calicicola* f. *dissecta*, *B. andicola* var. *Mandonii*, *B. vulgaris* var. *dissector*, *B. anthriscoides* var. *decomposita*, *B. involucrata* var. *retrorsa*. New combinations are as follows: *B. pilosa* var. *calicicola* (Greenm.), *B. triplinervia* var. *macrantha* (Wedd.) *B. triplinervia* var. *mollis* (Poepp. & Endl.), *B. Oerstediana* (Penth. ex Oerst.), *B. frondosa* var. *pallida* (Wieg.), *B. micrantha* var. *laciniata* (Hillebr.), *B. pilosa* var. *minor* (Bl.). The following are discussed: *B. Remyi* (Hillebr.) Sherff, *B. mawiensis* var. *lanaiensis*, Hillebrand, *Cosmos purpureus* (DC.) Benth. & Hook., *B. triplinervia* HBK., *B. speciosa* var. *patula* (Gardn.) O. E. Schulz.—B. W. Wells.

9877. ŠIRJAEV, G. *Onobrychis generis revisio critica.* [Critical revision of the genus *Onobrychis*.] Publ. Faculté Sci. Univ. Masaryk Bull. 56. P. 1-197. 17 pl. 3 fig. 9 maps. 1925.—The author defines the genus, records its important bibliography, and describes in detail the vegetative and reproductive organs. Two subgenera, *Euonobrychis* and *Sisyrosema*, as well as several subordinate categories are noted. Sixty-four species, several subspecies, varieties and forms are recognized. The following species are new: *Onobrychis Věrae*, Turcomania; *O. Handel-Mazzetti*, Italy; *O. Podpěrae*, Phrygia; *O. beata*, Asia Minor; *O. africana*, Algeria; *O. hispanica*, Spain; *O. Biebersteinii*, Caucasasia; *O. Nábělekii*, Armenia; *O. bithynica*, Asia Minor; *O. caucasica*, Caucasasia; and *O. Němecii*, Transcaucasias.—J. M. Greenman.

9878. WIDDER, FELIX J. *Die Arten der Gattung Xanthium. Beiträge zu einer Monographie.* [The species of the genus *Xanthium*. Contributions to a monograph.] Repert. Spec. Nov. Regni Veg. Beihefte 20: 1-222. 4 pl., 4 maps. 1923.—The author recognizes 25 species, grouped in 2 sections. A key to the species is provided, full synonymy, bibliography, and copious citation of exsiccatae are recorded. The following species are described as new to science: *Xanthium japonicum*, Japan; *X. decalvatum*, California; and *X. argenteum*, Chile. Several varieties and hybrids are also included.—J. M. Greenman.

9879. WINKLER, HUBERT. *Monographische Übersicht der Gattung Leptodermis.* [Monographic survey of the genus *Leptodermis*.] Repert. Spec. Nov. Regni Veg. 18: 145-166. 1922.—A synoptical revision is presented of the genus *Leptodermis* in which 28 species are recognized. The following new species, varieties and combinations of plants of China are included: *Leptodermis Dielsiana*; *L. Potanini* Batal. vars. *glauca* (*L. glauca* Diels), *tomentosa*, and *rufa*; *L. Schneideri* and var. *Hutchinsoni*; *L. Rehderiana*; *L. fusca*; *L. tomentella* (*Hamiltonia tomentella* Franch.); *L. microphylla*; *L. pilosa* Diels var. *glabrescens*; *L. oblonga* Bunge var. *leptophylla*; *L. ovata*; and *L. Stapfiana*.—J. M. Greenman.

FLORISTICS AND PLANT DISTRIBUTION

9880. ANSORGE, CARL. *Abies Lowiana* Murray. Mitteil. Deutsch. Dendrol. Ges. 35: 200-203. 2 pl. 1925.

9881. BECHERER, A. *Beiträge zur Flora des Rheintals zwischen Basel und Schaffhausen.* [Studies on the flora of the Rhine Valley between Basel and Schaffhausen.] Verh. Naturf. Ges. Basel 32: 172-200. 1920.

9882. BECHERER, A., E. STEIGER, UND G. LETTAU. *Die Flora des Naturschutz-reservates an der Rheinhalde oberhalb Basel.* [Flora of the reservation in the "Rheinhalde" above Basel.] Verh. Naturf. Ges. Basel 33: 127-217. 1 pl. 1921-1922.

9883. BINZ, A. *Ergänzungen zur Flora von Basel. II.* [Supplement to the flora of Basel. II.] Verh. Naturf. Ges. Basel 33: 256-280. 1921-1922.

9884. BRIQUET, JOHN. *Le Capsella procumbens* (L.) Fries dans les Alpes Lémaniques, avec quelques observations nouvelles sur l'organisation et les affinités des genres *Capsella*, *Hutchinsia* et *Hornungia*. [*Capsella procumbens* (L.) Fries in the Genevan Alps with some

observations on the structure and affinities of the genera *Capsella*, *Hutchinsia* and *Hornungia*.] *Verh. Naturf. Ges. Basel* 35: 321-335. 3 fig. 1925.

9885. C., S. Two orchids of Western Australia. *Victorian Nat.* 42: 182-184. 2 fig. 1925.—This paper gives notes on the sensitiveness of the labellum of *Caleana nigrita* and *Drakaea elastica* Lindl.—*Wm. Randolph Taylor*.

9886. CAMUS, AIMÉE. Sur la répartition géographique des Bambous à feuilles caduques de Madagascar. [Geographical distribution of the deciduous bamboos of Madagascar.] *Bull. Soc. Bot. France* 72: 541-542. 1925.—The genus *Perrierbambus*, quite distinct from all the other genera of the Bambuseae in its inflorescences and its fruits, presents another character, a vegetative one, in the deciduous nature of its leaves. Among the Madagascan bamboos hitherto described, *Perrierbambus* alone remains destitute of its leaves during a period as long as 6-7 months of the year. It owes the deciduous character of its leaves to the very long dry season of the eastern part of Madagascar, where it lives. In this region one finds a very special flora which Perrier de la Bâthie has named the leeward flora. *Perrierbambus madagascariensis* Camus is abundant in the basins of the Loky and of the Mahavary. *P. tsarasaoitrensis* Camus is widely distributed in the eastern part of the island from the region of Sambirano to the north, to the southwest and to the south.—*Henri des Gayets (transl. by E. B. Payson)*.

9887. CHUNG, H. H. A catalogue of trees and shrubs of China. *Mem. Sci. Soc. China*. [Shanghai] 1. 1-271. 1925.—An enumeration is given of the species of woody plants from China proper, together with the provinces from which they are reported. It is claimed that 60% of the species and 80% of the varieties are estimated to be endemic in China.—*Albert N. Steward*.

9888. COURTOIS, (le pere) S. J. Les Clematis de la province de Ngan-hoei (China). [Species of Clematis of the province of Ngan-hoei (China).] *Bull. Soc. Bot. France* 72: 422-445. 1925.—There have been no previous publications on the flora of Ngan-hoei. The materials brought together in the museum of Zi-ka-wei have made it possible for the author to make a brief survey. Besides the known authors, Courtois cites a Japanese book, "Phonzo," and 2 Chinese works: Pen ts'ao, a kind of classical treatise (1655) and Tche, a descriptive botany (1848) illustrated by engravings. Courtois describes in this first work 11 species of *Clematis* and he adds a list of *Clematis* sent from Yun-nan (Delavay), from Tche-fou (Fauvel) and from the Missions of Chensi and from Central Mongolia.—*J. Beauverie (transl. by E. B. Payson)*.

9889. DAHLSTEDT, H. Om Ölands Taraxacum-flora. [Taraxacum-flora of Öland (island in south Sweden).] *Ark. för Bot.* 19¹⁸: 1-19. 1925.—The author investigated the species-groups *Erythrosperma*, *Obliqua* and *Palustria* with the special purpose of comparing the Taraxacum-flora of Öland with that of Gotland. Most of the species of the above groups that have been found on Gotland also occur on Öland. As yet 47 species of Taraxacum are found on Öland, of which 27 belong to *Vulgaria*, 13 to *Erythrosperma*, 4 to *Palustria*, 2 to *Obliqua* and 1 to *Spectabilia*. The following are new: *Taraxacum bracteatum*, *T. hamatilobum*, *T. rubefactum*, *T. sublaciniatum* Dt. & Lindb., *T. sublaeticolor*, and *T. undulatifforme*.—*O. Heilborn*.

9890. DINTER, KURT. Botanische Reisen in Deutsch-Südwest-Afrika. [Botanical journeys in German Southwest Africa.] *Repert. Spec. Nov. Regni Veg. Beihefte* 3: 1-169. 1921.

9891. DINTER, K. Index der aus Deutsch-Südwestafrika bis zum Jahre 1917 bekannt gewordenen Pflanzenarten. XVII. [Index of plants known from German Southwest Africa to the year 1917. XVII.] *Repert. Spec. Nov. Regni Veg.* 20: 314-316. 1924.—This series is extended from No. 1874 to 1909 inclusive, and the following new species are described: *Othonna Dinteri* Muschler, *O. Muschleriana*, and *O. Schlechteriana*.—*R. E. Woodson, Jr.*

9892. ESPINOSA BUSTOS, MARCIAL R. Enumeración de plantas colectadas en "Los Bronces." [Enumeration of plants collected in "Los Bronces."] *Rev. Chilena Hist. Nat.* 28: 88-97. 1 fig. 1924.—While studying the distribution of the species of *Nothofagus* a visit was paid in February, 1923, to "Los Bronces," in the Andes of Central Chile, near Doñihue, Dept. Cachapoal. There was encountered *N. glauca* (Phil.) Espinosa, n. comb. (*Fagus glauca* Phil.), a tree of which the botanical history and distribution are carefully discussed. *N. megalocarpa* Reiche is shown to be its synonym. On this visit to "Los Bronces," many other plants, of all phyla, were collected, and these are systematically enumerated.—*F. W. Pennell*.

9893. HEINIS, FR. *Floristische Beobachtungen aus dem Basler Jura*. [Floristic observations from the Jura of Basel.] Verh. Naturf. Ges. Basel 35: 336-350. 1923.
9894. JOHANSSON, K. *Några Hieraciefynd i Stockholmstrakten*. [Hieracia from the neighbourhood of Stockholm.] Svensk Bot. Tidskr. 19: 485-89. 1925.—*H. megalotrachelum*, *H. complexum*, *H. constringens* Norrl. var. *Malmeanum*, *H. toerense*, *H. vulgatifforme* Dahlst. *querceti* and *H. hospitans* are described as new.—O. Heilborn.
9895. KELLER, ROBERT. *Neue Beiträge zur Kenntnis der europäischen Rosen*. [New contributions to the knowledge of the European roses.] Verh. Naturf. Ges. Basel 35: 51-68. 1923.
9896. KNOLL, W. *Anemone alpina* und deren Varietät *sulfurea* in Arosa. [Anemone alpina and its variety *sulfurea* in Arosa.] Verh. Naturf. Ges. Basel 35: 351-355. 1923.
9897. LEMAY, P. *La Flore du Labrador*. [The Flora of Labrador.] Nat. Canadien 51: 267-268. 1925. A note is given in reference to the doubtful identification of some reported species from Labrador.—A. H. MacKay.
9898. MATTFELD, JOHANNES. *Bericht über die pflanzengeographische Kartierung Deutschlands*. [Contribution to the plant geographic mapping of Germany.] Repert. Spec. Nov. Regni Veg. Beihefte 26: 58-68. 1924.
9899. MATTFELD, JOHANNES. *Die in Europa und dem Mittelmeergebiet wildwachsender Tannen*. [Species of fir growing wild in Europe and along the Mediterranean.] Mitteil. Deutsch. Dendrol. Ges. 35: 1-37. 10 pl. 1925.—Descriptions are given of 12 species of *Abies* growing wild in the area indicated. Much care is given as to their geographical distribution.—J. C. Th. Uphof.
9900. MATTFELD, JOHANNES. *In den Auwäldern der Kamčija in Bulgarien und über einige südöstliche Eschen*. [The forests of Kamčija in Bulgaria and some southeastern *Fraxinus* species.] Mitteil. Deutsch. Dendrol. Ges. 35: 277-284. 6 fig. 1925.—The writer emphasizes the systematic value of a number of *Fraxinus* species in a forest of Kamčija, especially *F. Pallisae* Wilmott, *F. holotricha* Koehne, and *F. coriariaefolia* Scheele.—J. C. Th. Uphof.
9901. MATTOON, WILBUR R. *Common forest trees of Florida. How to know them. A pocket manual*. 96 p. 93 fig. The Florida Forestry Association: Jacksonville, 1926.—Ninety-three native species of Florida trees are recorded in this handbook. Each species is described in non-technical terms and the descriptions are supplemented by figures showing distinctive characters of the species. Brief mention is made of several trees native to other countries than Florida, which have been introduced and have become naturalized in that state.—J. M. Greenman.
9902. MUGNIER, LOUIS. *Rosa villosa* L. en Haute Marne. [Rosa villosa L. in Haute Marne.] Bull. Soc. Bot. France 72: 611-613. 1925.—The localities where this rose has been found, commonly in colonies, are indicated. It grows in calcareous places in the shade of shrubs either on denudated or covered soils. Its branches, stiff and fascicled, its glaucous turions, its glaucous or grayish leaflets and its height of about 40 cm. attract the attention easily. *Rosa villosa* is related to *R. tomatosa* by *R. Sherardi* Davies. The first and the last of these 3 roses are, then, very near. A character of great importance in the determination should be given to the disc of the hypanthium, a constant character. *Rosa pomifera* Herrm. should be considered as essentially synonymous to *Rosa villosa*.—Henri des Gayets (transl. by E. B. Payson).
9903. NAKAI, T. *Notes sur les violettes du Japon*. [Notes on the violets of Japan.] Bull. Soc. Bot. France 72: 180-195. 1925.—The author gives a rapid summary of the most remarkable violets of Japan. Japan possesses more than 100 species of violets, some with stems, some without stems, some have violet flowers, some purple, white, rose, roseate or yellow.—Henri des Gayets (transl. by E. B. Payson).
9904. REIMERS, H. *Die Vegetation der Rhönmoore*. Repert. Spec. Nov. Regni Veg. Beihefte 26: 21-55. 3 pl. 1924.
9905. RILEY, L. A. M. *Notes on Madeira plants*. Kew Bull. 1925: 26-33. 1925.—The author gives a short account of the types of vegetation. This is followed by an annotated list of the 54 species collected in April, 1924.—T. J. Fitzpatrick.
9906. SCHNEIDER, CAMILLO. *Die Weiden der Neuen Welt*. [The willows of the New

World.] Mitteil. Deutsch. Dendrol. Ges. 35: 37-44. 1925.—The writer enumerates 116 species of *Salix* belonging to 23 sections which have been thus far observed in the New World.—*J. C. Th. Uphof.*

9907. SCHRÖTER, C. Über die Verbreitung von *Populus alba* L. [Distribution of *Populus alba* L.] Verh. Naturf. Ges. Basel 35: 83-102. 1923.

9908. SPINNER, HENRI. Contribution à la géographie et à la biologie du buis (*Buxus sempervirens*). [The geography and biology of box.] Verh. Naturf. Ges. Basel 35: 129-147. 2 pl. 1923.

9909. STEFFEN, H. Die Bedeutung der Allensteiner Senke für die Besiedelung Ostpreussens mit pontischen Arten. Repert. Spec. Nov. Regni Veg. Beihefte 26: 1-20. 1 map. 1924.

9910. SVENONIUS, HERMAN. Luleåtraktens flora. [Flora of the neighborhood of Luleå (city in north Sweden).] Svensk Bot. Tidskr. 19: 431-84. 1925.—The author gives some special notes on the spring flora and the flora of certain lakes. Extensive lists of plant localities are given. *Hieracium farreaticiceps*, *H. subumbricola*, *H. substricticaule*, *H. Svenonianum*, *H. tanyphyton* and *Taraxacum lucescens* are described as new by H. DAHLSTEDT.—*O. Heilborn.*

9911. THELLUNG, A. Über die Heimat des Liebstöckels (*Levisticum officinale* Koch.) [The home of lovage.] Verh. Naturf. Ges. Basel 35: 27-33. 1923.

9912. TOLMACHEW, A. *Larix sibirica* Ledeb. auf der Kola-Halbinsel. [*Larix sibirica* Ledeb. in the Kola Peninsula.] Svensk. Bot. Tidskr. 19: 523. 1925.—This species, in Europe, was previously known only from the extreme northeastern part of European Russia. It is now reported from the eastern coast of Kola Peninsula, where one single tree has been found.—*O. Heilborn.*

9913. TRAIL, JAMES WILLIAM HELENUS. Flora of the city parish of Aberdeen. Aberdeen University Studies 91: 57-326. 1 pl. 1923.

9914. WILLIAMSON, H. B. Three species of *Pimelea*. Victorian Nat. 42: 196-198. 1 pl. 1925.—This is a group of critical notes on *Pimelea Treyvaudii* F. v. M., *P. spathulata* Labill., and *P. ligustrina* Labill.—*Wm. Randolph Taylor.*

MISCELLANEOUS, UNCLASSIFIED PUBLICATIONS

SAM F. TRELEASE, *Editor*

9915. BARY, PAUL. Le caoutchouc. (Les colloïdes dans l'industrie.) [Caoutchouc, rubber.] vi + 255 p. Libr. Dunod: Paris, 1923.

9916. BRUCE, DONALD. Some possible errors in the use of curves. Jour. Agric. Res. 31: 923-928. 6 fig. 1925.—The graphic method, when used in analyzing empirical data, employs variables which are more or less loosely correlated. Certain processes which would be correct with perfectly correlated variables result in erroneous conclusions when empirical data are used. The result of interchanging dependent and independent variables is well understood; it is shown that even more serious mistakes may be made by combining the results of 2 curves in various ways. A concrete example, illustrated by 6 graphs, is used to demonstrate this.—*Author.*

9917. CARON, OMER. Les tissus histologiques et le microscope polarisant. [Histological tissues and the polarizing microscope.] Sci. Agric. 6: 34-36. 1925.—The author describes in detail the construction and manipulation of a polarizing microscope, and discusses its value in the differentiation of various plant and animal tissues.—*T. G. Major.*

9918. CLARK, CHARLES HERBERT. Practical methods in microscopy. 5th ed., xxviii + 337 p. D.C. Heath and Co.: Boston, New York, 1925.

9919. COLWELL, HECTOR ALFRED, AND SIDNEY RUSS. Radium, X-rays and the living cell, with physical introduction. 2nd ed., xi + 365 p. G. Bell and Sons, Ltd.: London, 1924.

9920. DRIESCH, HANS. Geschichte des vitalismus. [Vitalism.] [2nd, enlarged ed. of: *Der vitalismus als geschichte und als lehre.*] x + 213 p. J. A. Barth: Leipzig, 1922.

9921. EVANS, MORGAN W. Making photographs of plants to be used as illustrations for scientific papers. Jour. Amer. Soc. Agron. 17: 526-532. 1925.

9922. GAGE, SIMON H. *The microscope; an introduction to microscopic methods and histology.* 14th ed., ix + 517 p. 275 fig. Comstock Publishing Co.: Ithaca, New York, 1925.

9923. HOLLAND, J. H. *Sources of industrial alcohol.* Kew Bull. 1925: 193-216. 1925.—A review is presented of the sources, mainly vegetable, from which alcohol is obtainable. Literature references and an index are included.—*T. J. Fitzpatrick.*

9924. JEANTET, P. *L'examen sur fond noir au microscope des préparations fixées et colorées.* [Microscopical examination on a black background of fixed and stained preparations.] Compt. Rend. Soc. Biol. 93: 895-896. 1925.—While this method of examining objects is new, the author describes a new type of condenser which permits much better results than have hitherto been possible. The method is especially good for microphotography.—*Oran Raber.*

9925. SHULL, C. A. *Fiftieth anniversary issue.* Bot. Gaz. 80: 338-339. 1925.—A sketch of the history of the Botanical Gazette from its founding in 1875 by Prof. John Merle Coulter to the present time. Though beginning with but 4-12 pages a month, the magazine early claimed attention and in a few years grew to be one of the most influential scientific journals of its time. Throughout the entire half century of its history Dr. Coulter has been its editor.—*B. W. Wells.*

9926. SUMNER, F. B. *The responsibility of the biologist in the matter of preserving natural conditions.* Science 54: 39-43. 1921.

9927. TRESSLER, DONALD K. *Marine products of commerce; their acquisition, handling, biological aspects, and the science and technology of their preparation and preservation.* 762 p. The Chemical Catalog Co., Inc.: New York, 1923.

9928. VANKATRAMAN, T. S. *A few hints on labeling in experiment stations.* Agric. Jour. India 15: 45-50. 3 pl., 1 fig. 1920.

9929. WALLIS, THOMAS EDWARD. *Analytical microscopy, its aims and methods.* viii + 149 p. E. Arnold & Co.: London, 1923.—(See also Bot. Absts. 8, Entry 597; 9, Entry 993.)

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